UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

X **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the fiscal year ended December 31, 2021

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the transition period from _____ to _____

Commission file number: **000-55264**

DYADIC INTERNATIONAL, INC.

(Exact name of registrant as specified in its charter)

Delaware	**45-0486747**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

140 Intracoastal Pointe Drive, Suite 404
Jupiter, Florida 33477
(Address of principal executive offices) (Zip Code)

(561) 743-8333
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.001 per share	DYAI	The NASDAQ Stock Market LLC

Securities registered pursuant to Section 12(g) of the Act: None.

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No X

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No X

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.
Yes X No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes X No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☐	Accelerated filer ☐
Non-accelerated filer X	Smaller reporting company X
	Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. Yes ☐ No X

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No X

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant (23,357,104 shares) computed by reference to the closing price of $3.59 as reported on the NASDAQ Stock Market on June 30, 2021 (the last business day of the registrant's most recently completed second fiscal quarter) was approximately $83.8 million. Shares of the registrant's common stock held by executive officers, directors, and their affiliates have been excluded from this calculation. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

As of March 28, 2022, the registrant had 28,264,157 shares of common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

The information required by Part III of this Report, to the extent not set forth herein, is incorporated in this Report by reference to the Registrant's definitive proxy statement relating to the 2022 annual meeting of shareholders. The definitive proxy statement will be filed with the Securities and Exchange Commission within 120 days after the end of the 2021 fiscal year.

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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

Information (other than historical facts) set forth in this Annual Report contains forward-looking statements within the meaning of the Federal securities laws, which involve many risks and uncertainties that could cause our actual results to differ materially from those reflected in the forward-looking statements. Forward-looking statements generally can be identified by use of the words "expect," "should," "intend," "anticipate," "will," "project," "may," "might," "potential," or "continue" and other similar terms or variations of them or similar terminology. Such forward-looking statements are included under Item 7 "Management's Discussion and Analysis". Dyadic International, Inc., and its subsidiaries cautions readers that any forward-looking information is not a guarantee of future performance and that actual results could differ materially from those contained in the forward-looking information. Such statements reflect the current views of our management with respect to our operations, results of operations and future financial performance. Forward-looking statements involve many risks, uncertainties or other factors beyond Dyadic's control. These factors include, but are not limited to, (1) general economic, political and market conditions; (2) our ability to generate the required productivity, stability, purity, performance, cost, safety and other data necessary to carry out and implement our biopharmaceutical research and business plans and strategic initiatives; (3) our ability to retain and attract employees, consultants, directors and advisors; (4) our ability to implement and successfully carry out Dyadic's and third parties' research and development efforts; (5) our ability to obtain new license and research agreements; (6) our ability to maintain our existing access to, and/or expand access to third party contract research organizations and other service providers in order to carry out our research projects for ourselves and third parties; (7) competitive pressures and reliance on our key customers and collaborators; (8) our ability, and the ability of the contract research organizations and other third party service providers with whom we are currently working with, to advance vaccine candidates into, and successfully complete, preclinical studies and clinical trials; (9) the commercialization of our vaccine candidates, if approved; (10) the pharmaceutical and biotech industry, governmental regulatory and other agencies' willingness to adopt, utilize and approve the use of the C1-cell protein production platform and our other technologies; (11) the risk of theft, misappropriation or expiration of owned or licensed proprietary and intellectual property, genetic and biological materials owned by us and/or Danisco US, Inc. and VTT Technical Research Centre of Finland Ltd; (12) the speculative nature and illiquidity of equity securities received as consideration from sub-licenses; (13) our expectations concerning the impact of the novel coronavirus identified as "COVID-19" on our business and operating results; and (14) other factors discussed in Dyadic's publicly available filings, including information set forth under the caption "Risk Factors" in this Annual Report. We caution you that the foregoing list of important factors is not exclusive. Any forward-looking statements are based on our beliefs, assumptions and expectations of future performance, considering the information currently available to us. These statements are only predictions based upon our current expectations and projections about future events. There are important factors that could cause our actual results, level of activity, performance or achievements to differ materially from the results, level of activity, performance or achievements expressed or implied by the forward-looking statements. Moreover, we operate in a highly regulated, competitive and rapidly changing environment. Our competitors have far greater resources, infrastructure and market presence than we do which makes it difficult for us to enter certain markets, and/or to gain or maintain customers. New risks emerge from time to time and it is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. Before investing in our common stock, investors should carefully read the information set forth under the caption "Risk Factors" and elsewhere in this Annual Report which could have a material adverse effect on our business, results of operations and financial condition.

You should not rely upon forward-looking statements as predictions of future events. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee that the future results, levels of activity, performance and events and circumstances reflected in the forward-looking statements will be achieved or occur. Except as required by law, we undertake no obligation to publicly update any forward-looking statements for any reason after the date of this Annual Report to conform these statements to actual results or to changes in our expectations.

We qualify all our forward-looking statements by these cautionary statements. In addition, with respect to all our forward-looking statements, we claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995.

PART I

Item 1. Business

Overview

Dyadic International, Inc. ("Dyadic", "we", "us", "our", or the "Company") is a global biotechnology platform company based in Jupiter, Florida with operations in the United States and a satellite office in the Netherlands, and it utilizes a number of third-party consultants and research organizations to carry out the Company's activities. Over the past two plus decades, the Company has developed a gene expression platform for producing commercial quantities of industrial enzymes and other proteins, and has previously licensed this technology to third parties, such as Abengoa Bioenergy, BASF, Codexis and others, for use in industrial (non-pharmaceutical) applications. This technology is based on the *Thermothelomyces heterothallica* (formerly known as *Myceliophthora thermophila*) fungus, which the Company named C1. The C1-cell protein production platform is a robust and versatile thermophilic filamentous fungal expression system for the development and production of biologic products including enzymes and other proteins.

On December 31, 2015, the Company sold its industrial technology business to Danisco USA ("Danisco"), the industrial biosciences business of DuPont (NYSE: DD) (the "DuPont Transaction"). As part of the DuPont Transaction, Dyadic retained co-exclusive rights to the C1-cell protein production platform for use in all human and animal pharmaceutical applications, and currently the Company has the exclusive ability to enter into sub-license agreements (subject to the terms of the license and to certain exceptions) for use in all human and animal pharmaceutical applications. Danisco retained certain rights to utilize the C1-cell protein production platform in pharmaceutical applications, including the development and production of pharmaceutical products, for which it will be required to make royalty payments to Dyadic upon commercialization. In certain circumstances, Dyadic may owe a royalty to either Danisco or certain licensors of Danisco, depending upon whether Dyadic elects to utilize certain patents either owned by Danisco or licensed in by Danisco.

After the DuPont Transaction, the Company has primarily been focused on the animal and human biopharmaceutical industries, specifically in further improving and applying the proprietary C1-cell protein production platform into a safe and efficient protein production platform to help speed up the development, lower production costs and improve the performance of biologic vaccines and drugs and other biological products at flexible commercial scales. Some examples of human and animal vaccines and drugs which have the potential to be produced from C1-cells are protein antigens, virus-like particles ("VLPs"), monoclonal antibodies ("mAbs"), Bi/Tri-specific antibodies, Fab antibody fragments, Fc-fusion proteins, as well as other therapeutic enzymes and proteins. The Company is involved in multiple funded research collaborations with animal and human pharmaceutical companies which are designed to leverage its C1-cell protein production platform to develop innovative vaccines and drugs, biosimilars and/or biobetters. Additionally, the Company has begun to develop other technologies that have potential applications in non-pharmaceutical markets.

We rely on our existing cash and cash equivalents, investments in debt securities, and operating cash flows to provide the working capital needs for our operations. We believe that our existing cash position and investments in investment grade securities will be adequate to meet our operational, business, and other liquidity requirements for at least the next twelve (12) months. Additionally, the Company has decided to fund the pre-clinical and cGMP manufacturing and a Phase I clinical trial of its lead asset, the DYAI-100, COVID-19 vaccine candidate, to validate C1 produced proteins are safe in humans, serve as proof of concept for next generation variant based COVID-19 vaccine candidates and accelerate the C1-cell protein production platforms adoption. In the event our financing needs for the foreseeable future are not able to be met by our existing cash, cash equivalents and investments, we would seek to raise funds through public or private equity offerings, and through other means to meet our financing requirements.

Impact of COVID-19

The outbreak of COVID-19 has led to adverse impacts on the U.S. and global economies and created uncertainty regarding the potential impact to the Company's employees, operations, and research projects.

The extent to which the COVID-19 pandemic will directly or indirectly impact our business will depend on future developments that are highly uncertain, including a) infection and vaccination rates globally, b) new information that may emerge concerning the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), c) its variants and the actions taken and the level of success to contain or treat the SARS-CoV-2 virus and its variants, d) the economic impact on local, regional, national and international business partners and markets, e) delays or disruptions in our on-going research projects, and f) unavailability of the employees of the Company or third-party consultants, contract research organizations and cGMP facilities with whom we conduct business. Management is actively monitoring this situation and the possible effects on its financial condition, liquidity, operations, vendors, industry, and workforce. Even after the COVID-19 pandemic has subsided, the Company may continue to experience adverse impacts to its business because of economic recession or depression that has occurred or may occur in the future. Given the daily evolution of the COVID-19 outbreak and the ongoing response to curb its spread (including government travel and meeting restrictions), we are not able to accurately estimate the effects of the COVID-19 outbreak to our results of operations, financial condition, or liquidity.

Our Technology

The Company believes that the C1 cell line is unique compared to traditional filamentous fungal cells, and the C1-cell protein production platform has the potential to be used in the discovery, development and manufacturing of biologic medicines and vaccines, given its anticipated competitive advantages compared to certain other legacy biopharmaceutical expression systems, such as insect cells (i.e., baculovirus) and CHO ("Chinese Hamster Ovary") cells. We believe that in comparison to CHO cells, the C1 cell line has several significant potential operational advantages, which include but are not limited to:

Purity
- High retention of target secreted protein through downstream processing
- No requirement for viral (i.e., CHO and Baculovirus) or endotoxin (i.e., *E.coli*) removal

Productivity
- Robust & versatile growth conditions
- High yields of secreted protein
- Low viscosity due to C1's unique morphology

Robustness
- Proven at both small and large scale, ranging from laboratory microtiter plates, shaker flasks, single use and/or stainless-steel microbial fermenters
- Stable and correctly folded monoclonal antibodies (mAbs); having binding, neutralizing and certain other properties similar to CHO produced mAbs

Speeds
- Develop stable C1-cell lines for protein production in ~ 60 days
- Production time savings of ~30 days over CHO-cell production (C1: 12-14 days vs. CHO 41-54 days)
- Manufacturing ~ 3-4 batches of C1 produced mAbs in the same time it takes to make 1 batch using CHO-cells

Costs
- High yields and rapid manufacturing cycle times reduce costs and shrink manufacturing footprint
- C1-cells can be grown using low-cost and readily available cGMP media; C1 media < 1/20 of the cost of CHO cell media
- No requirement for viral or endotoxin removal, simplifies processing compared to CHO, Baculovirus & E. coli saving time and money

Competition

We believe that the C1-cell protein production platform has potential to become a leading alternative to several legacy production technologies currently used in the biopharmaceutical industry to produce vaccines, monoclonal antibodies, and other therapeutic proteins for both the human and animal health markets. C1 has some inherent benefits and potential competitive advantages compared to CHO cells, *E. coli*, Pichia, and Insect Cells (i.e., Baculovirus) as discussed below:

- Mammalian cells: Currently the preferred production host for most complex protein therapeutics due mainly to their ability to produce proteins with human-like glycosylation. This market is dominated by CHO cells. Disadvantages include the longer duration required for cell line development, fermentation, and increased costs associated with process media.
- Bacterial: Bacteria such as *E. coli* are currently the easiest, cheapest, and quickest method for recombinant protein expression and are often used in laboratory settings as well as commercial production of certain non-glycosylated proteins. However, they produce toxic and pyrogenic cell wall components that may make them less suitable to produce biopharmaceuticals or food components. Moreover, insoluble expression, a frequent outcome in bacterial expression, is challenging with regard to cost of goods due to the need for refolding and its direct impact on reduced overall yields.
- Yeast: In contrast to bacteria, yeast, such as *Pichia pastoris*, do not produce potentially toxic and pyrogenic cell wall components. Further, the genetic tools for yeast development are advanced and enable continued engineering of new strains that may become more suitable than CHO cell lines. Disadvantages include the typically lower protein titers than C1-cells and traditional yeast cells have a greater number of higher N and O glycosylation structures.
- Insect cells: Insect cells (i.e., Baculovirus) offer protein expression with post translational modifications like mammalian cells, ease of scale-up, and simplified cell growth readily adapted to high-density suspension culture for large-scale expression. Baculovirus expression systems are used for producing recombinant protein, especially for vaccine antigens. Disadvantages include the comparably lower protein yields than C1 and the need for an added viral inactivation step.

We believe that our C1-cell protein production platform has the potential to become a leading protein production platform for developing and manufacturing proteins for use in biopharmaceuticals, food products and diagnostics due to C1's potential speed of development, high protein yields, scalability, low-cost media, and hence lower production costs.

Our Industry and Potential Markets

Based on feedback from our collaborators and our ongoing discussions with leading pharmaceutical and biotech companies, contract manufacturing organizations (CMOs), leading academic institutions, as well as U.S. and foreign governmental agencies, we continue to believe that the biopharmaceutical market is an attractive opportunity to apply our C1-cell protein production platform. The Company continues to evaluate potential opportunities to expand the application of our C1-cell protein production platform, and is currently focused on the following markets:

- Recombinant vaccines and drugs for animal and human health
- New innovative biotherapeutics
- Biosimilars / Biobetters non-Glycosylated/Glycosylated protein markets
- Diagnostic and reagents
- Alternative food

The use of biologic medicines, for applications such as infectious disease vaccines and therapeutics are growing significantly. However, biologic medicines are in many cases limited and expensive for both patients and health care systems. The Company believes that lack of access and high cost is, in part, the result of the following bottlenecks in the development and manufacture of biologic medicines:

- Extended stable cell line development timelines
- Insufficient titers and overall yields
- Expensive, often royalty stacked, production media in the case of CHO cell lines
- Long production time for stable CHO cell lines
- Previous underfunded development efforts for a more efficient next-generation gene expression system

The Company believes that the biopharmaceutical industry can benefit from an innovative protein production platform that is safe, efficient, reliable, and cost effective. Such a platform would facilitate the rapid and high titer production of difficult to express proteins resulting and more affordable biopharmaceuticals. The C1-cell protein production platform has the potential to be an alternative to CHO, Baculovirus and other legacy expression systems to produce proteins for vaccines, therapeutics, diagnostics, alternative foods and other biological products.

Potential Opportunity to Use C1 in Drug Discovery and Early Development Process

While our focus has been and remains on developing stable C1 cell lines to speed up the development, lower production costs, improve the performance of biologic vaccines and to develop drugs at flexible commercial scales, we have identified biologics drugs discovery and early development process as one area where C1 also may add value based on our discussions with various pharmaceutical and biotech companies. This area includes the biologics drug discovery and early development process requires sufficient levels of proteins to be expressed as quickly as possible to identify new drug candidates within a limited time. Currently, HEK 293 cells (human embryonic kidney cells) are commonly used for this application. Given that C1 cells have demonstrated the capability to express and produce comparable and even larger quantities of protein than HEK 293 cells, we believe that C1 has the potential to help overcome certain protein expression challenges in the biologics drug discovery and development stages. We have had discussions with third parties, including our existing collaborators, to identify additional avenues to potentially adapt our C1-cell protein production platform for this application.

Our Research Partners and Contract Research Organizations (CROs)

Currently, the Company is conducting its C1-cell protein production platform research and other internal and external third-party programs with several contract organizations as follows:

(1) Research and Development Agreement with VTT Technical Research Centre of Finland, Ltd ("VTT")

Since September 2016, the Company has been working with VTT Technical Research Centre of Finland, Ltd. ("VTT"), a third-party contract research organization, to further modify and improve the Company's C1-cell protein production platform to ensure a safe and efficient expression system for use in speeding up the development and lowering the cost of manufacturing pharmaceutical products and processes. VTT is one of the leading research and technology organizations in Europe, and it has conducted research and development on fungi and other microorganisms for more than three decades. VTT is continuing their development work to further develop our C1-cell protein production platform.

On June 28, 2019, the Company extended its research contract ("Contract") through June 2022 with VTT. Under the terms of this Contract, Dyadic will pay VTT a total of EUR €2.52 million over three years to continue developing Dyadic's C1-cell protein production platform for therapeutic protein production, including C1 host system improvement, glycoengineering, and management of third-party target protein projects. VTT is subject to an additional success bonus up to EUR €350,000 based on the technical targets stipulated in the Contract. Dyadic and its sublicensees will also have the right to use synthetic promoters developed by VTT with an access fee. On November 9, 2021, the Company further expanded the Contract to pay an additional EUR €191,700 over the next 6 months to conduct the glycoengineering strategy with the best protease deletion strains and other platform development work. The Company is in the process of finalizing its research plans with the expectation of signing an additional extension with VTT which will be necessary to achieve our near-term and medium-term goals and objectives. Dyadic has the right to terminate the current Contract with 90 days' notice.

(2) Collaboration Agreement with BDI

On June 30, 2017, the Company entered into a strategic Research Services Agreement (the "RSA") with Biotechnology Developments for Industry in Pharmaceuticals, S.L.U. ("BDI Pharma"), and with VLP The Vaccines Company, S.L.U. ("VLPbio"), both of which are subsidiaries of Biotechnology Developments for Industry, S.L., a Spanish biotechnology company ("BDI Holdings" and together with BDI Pharma and VLPbio, "BDI").

The Company paid EUR €1.0 million (the "RSA Initial Payment") in cash to engage BDI to develop designated C1 based product candidates and further improve the C1 manufacturing process, in consideration of which Dyadic also received a 16.1% equity interest in BDI Holdings and a 3.3% equity interest in VLPbio. Under the RSA, BDI is obligated to spend a minimum amount of EUR €936,000 over two years for the research and development project.

On July 26, 2021, the Company entered (i) a Sale and Purchase of Shares Agreement under which the Company agreed to sell its 16.1% equity interest in BDI Holdings, and (ii) a Sale and Purchase of Shares Agreement under which the Company agreed to sell its 3.3% equity interest in VLPBio (together the "BDI Sale"). In connection with the closing of the BDI Sale, the Company received approximately $1.6 million, net of transaction and legal expenses in August 2021. The gain generated from the BDI Sale was recorded in other income.

In connection with the BDI Sale, the Company also entered into an amendment to the Service Framework Agreement (the "Amended SFA") with BDI Pharma. Under the Amended SFA, the Company maintains the right to engage in research and development projects at BDI Pharma until June 30, 2025, with the non-compete term extending to June 30, 2030, without any other material terms and conditions changed.

(3) Other CROs and cGMP Manufacturers

The Company works with other research providers, cGMP manufacturers and other contract research organizations from time to time, which are important to achieve the Company's scientific and business objectives. These arrangements are typically work for hire on an as need basis, however, certain of these programs, if negatively impacted due to resource availability, disagreements, or for other reasons could lead to delays or inability to realize our research and commercial objectives.

In March 2021, the Company engaged CR2O, a contract research organization, to manage and support further preclinical and clinical development of DYAI-100. CR2O engaged Bio-Technology General (Israel) Ltd., ("BTG"), a cGMP subcontractor, to produce the DYAI-100 drug substance and perform certain other analytical tests required to release the final drug product. On February 3, 2022, BTG advised Dyadic that it wanted to finalize the terms of a commercial manufacturing agreement directly with Dyadic in order to continue to fulfill its obligation under the CR2O contract. The Company and BTG have been discussing the possible terms of a commercial manufacturing agreement that would be acceptable to both parties. Should these negotiations fail, the DYAI-100 project could be delayed.

Our Research and Development ("R&D") Programs

(1) Internal Research Programs

C1 Production Host Improvement Programs

The Company has research and development agreements with VTT, other CROs and service and technical providers to further improve its C1-cell protein production platform to become an even more robust, versatile, and efficient therapeutic protein production platform. Ongoing projects include, among others: (i) improving the C1 genetic tools, (ii) further reducing the background protease(s) levels by identifying and deleting certain protease genes and/or modifying C1 fermentation processes, (iii) developing high expression C1 cell lines by precision engineering, and (iv) modifying the glycosylation pathway of C1 cells in order for C1 to express certain mAbs and other proteins with mammalian like glycosylation structures and to eliminate or modify certain unwanted glycan structures such as N and O-glycosylation.

We continue to generate a growing amount of data that demonstrates different C1-produced proteins are properly folded and are biologically active:

- Developing antigens that were produced by C1 (e.g., SARS-CoV-2 RBD and hemagglutinin (HA)) were not only produced at high levels, but they were also importantly shown to be safe, effective, and protective in several animal trials and in challenge tests.
- Developing the C1-cell protein production platform for expressing mAbs at relatively high levels and high quality (e.g., data from more than one large pharma collaborator demonstrated that the binding kinetics of mAbs produced from C1 are virtually indistinguishable from the binding kinetics of reference mAbs which were produced in CHO cells).
- Success in glycoengineering C1 cells to express mAbs that have human like glycan structures.
- Expressed a number of third-party monoclonal antibodies (mAbs) which were assayed by multiple third parties who reported that the neutralizing activity assay demonstrated great similarity between C1-produced mAb and CHO-produced mAbs.
- Expressed a number of other types of therapeutic proteins, such as bi-specifics, tri-specifics and Fc-fusion proteins, at relative high yields compared to other production hosts and high quality (e.g., expressed a third party bi-specific antibody which was assayed by the third party in an in vitro cellular activity assay which indicated that dose response curves for the C1 expressed bi-specific antibody were very similar to the CHO expressed bi-specific antibody).

Glycosylated Therapeutic Programs and Potential Nivolumab Commercialization Program

The Company's longer-term objective, which will require substantially more time and capital is to apply the C1-cell protein production platform for the large therapeutic glycoprotein market. We believe that the rapid advances being made in genomics and synthetic biology, make the C1 fungal cell line a promising candidate to further engineer glycosylation pathways: (i) to produce therapeutic proteins having human like glycoforms structures such as G0, G2, G0F, and G2F; (ii) to reduce or eliminate O-glycosylation; and (iii) to create potentially improved immunogenicity in the case of vaccines.

The initial steps to develop C1 strains that produce mAbs with mammalian-like glycosylation are progressing at VTT. Based on research results we have to date, the Company believes that our C1-cell protein production platform has the potential to become a useful platform for the development and production of therapeutic glycoproteins with human-like or potentially even superior glycan structures. We believe that, if successful, the glycoengineering of C1 cells may help to position the C1 protein production platform to be an important production platform for developing and manufacturing glycosylated antibodies and other glycoproteins. These initial glycoengineered C1 cells have to date shown reduced gene expression levels when compared to the non-glycoengineered C1 cells. Several approaches are now being applied to reach our main goal – to develop cell line(s) that resemble the 3 main goals: (i) to produce therapeutic proteins having human-like glycoform structures at high levels, (ii) to produce therapeutic proteins at high level and (iii) to produce stable therapeutic proteins.

We continue the development of Nivolumab (Opdivo®) as a biosimilar/biobetter immunotherapeutic biologic drug for human metastatic cancers, including melanoma, lung, and other cancers. The aim of this program is to express Nivolumab (mAb) with a glycoprotein structure like Nivolumab produced in CHO cells. So far, C1 produced Nivolumab has been produced with similar glycosylated structures and the development of high producing C1 cell line that expresses a lower cost biosimilar/Biobetter Nivolumab as part of its glycoengineering program for glycoprotein Immunoglobulin G (IgG) monoclonal antibodies is ongoing. This project has proved the concept that C1-cell protein production platform can be applied to several very high value therapeutic or preventative monoclonal antibodies.

(2) Animal Health Programs

ZAPI Biologic Vaccines Program

We have completed our participation in the €20 million Zoonosis Anticipation Preparedness Initiative ("ZAPI") program. ZAPI (www.zapi-imi.eu) is a five-year research and development project funded as part of IMI EU program (Zoonoses Anticipation and Preparedness Initiative (ZAPI project; IMI Grant Agreement n°115760)), with the assistance and partial financial support of IMI and the European Commission, and in-kind contributions from EFPIA partners. This project aims to develop a suitable platform for the rapid development and production of vaccines and protocols to fast-track registration of product developed to combat pandemic Zoonotic diseases that have the potential to affect human and animal populations. The Company's C1 recombinant protein production platform has been selected by ZAPI as a production host of antigens for the SBV and RVFV, and ZAPI has expanded its program with the Company and provided additional funding in 2019 and 2021, respectively. The SBV antigen from C1 was produced at approximately 300 times greater yields than the SBV antigen from baculovirus and was more stable. Additionally, the C1 SBV antigen was shown to be safe and very effective (full protection) in protecting cattle, sheep and mice from the SBV. Based on these results, additional fully funded animal trials are continuing in 2021 with C1 expressed antigens for SBV and RVFV and to generate additional safety and efficacy data.

ZAPI brought together experts in human and animal health to create new platforms and technologies that will facilitate a fast, coordinated, and practical response to new pandemic threats as soon as they emerge. The Company's C1 recombinant protein production platform was selected by ZAPI as a production host of antigens for the Schmallenberg virus ("SBV") and Rift Valley Fever virus ("RVFV"). The C1 expressed SBV antigen was produced in less time and at approximately 300 times greater yield than the SBV antigen expressed from insect (baculovirus) cells and was more stable. Additionally, the C1 SBV antigen was shown to be safe and effective to provide full protection to cattle, sheep and mice. Based on these results, ZAPI provided the Company with additional funding in 2021 to produce both the SBV and RVFV antigens in order to perform expanded animal trials with the C1 expressed antigens which is expected to generate additional safety and efficacy data. In the first quarter of 2021, ZAPI expanded its program with Dyadic by providing additional funding to C1 research and development efforts as well as to conduct additional animal studies using the SBV and RVFV antigens produced from C1. There was a ZAPI Stakeholders Final Conference held on February 4-5, 2021.

Phibro Sublicense Agreement

On February 10, 2022, we entered into an exclusive license agreement with Phibro Animal Health ("Phibro"), a leading global diversified animal health and mineral nutrition company. Under the terms of the agreement, Dyadic granted Phibro an exclusive license for its proprietary C1-cell protein production platform to produce specific targeted antigens for development and commercialization of a poultry vaccine for a Phibro targeted disease. We are continuing development work to find a vaccine candidate using Dyadic's C1-cells and expect to continue working on developing additional animal vaccine candidates to be produced from Dyadic's C1-cells. This agreement follows the successful proof of concept development work, including animal trials previously completed.

Novovet and Luina Bio

On April 26, 2019, the Company entered into a sub-license agreement (the "Luina Bio Sub-License Agreement") with Luina Bio Pty Ltd. ("Luina Bio") and Novovet Pty Ltd ("Novovet"). Under the terms of the Luina Bio Sub-License Agreement, the Company has granted to Novovet, subject to the terms of the license agreement entered into between the Company and Danisco US, Inc. on December 31, 2015, a worldwide sub-license to certain patent rights and know-how related to Dyadic's proprietary C1-cell protein production platform for the exclusive and sole purpose of commercializing certain targeted antigen and biological products for the prevention and treatment of various ailments for companion animals.

In consideration of the license granted pursuant to the Luina Bio Sub-License Agreement, Dyadic received a 20% equity interest in Novovet ("Novovet Up-Front Consideration") in accordance with the terms of Novovet's Shareholder Agreement and will receive a percentage of royalties on future net sales and non-sales revenue, if any, which incorporates Dyadic's proprietary C1-cell protein production platform.

To date Novovet has not raised the capital required to move this opportunity forward, and therefore, the Company has not transferred its C1-cell protein production platform to Novovet.

On February 15, 2022, the Company sent a letter to Luina Bio Pty Ltd and Novovet Pty Ltd, indicating its intention to terminate the Luina Bio Sub-License Agreement.

Other Opportunities

We have also received funding from other top animal health companies to evaluate the use of the C1-cell protein production platform for expression and production of vaccines and therapeutic proteins for companion and farm animal diseases.

(3) Human Health Programs

COVID-19 DYAI-100 Vaccine Candidate

As a result of the positive results generated from the use of the Company's C1-cell protein production platform in the ZAPI project, in the Company expanded its in-house and third-party vaccine-based antigen research and development efforts. The Company has invested more than $5.3 million in the development of its proprietary DYAI-100 COVID-19 vaccine candidate to date. The DYAI-100 vaccine candidate has demonstrated excellent results in several pre-clinical animal studies. In particular, the Company is relying on the preclinical animal studies conducted by the Israel Institute for Biological Research (IIBR) who were using the SARS-CoV-2 RBD antigen from the Company's RBD C1 strain. The Company is also relying on the toxicology study which concluded that the C1 SARS-CoV-2-RBD vaccine was not associated with major systemic adverse effects, and it is considered safe following four repeated vaccination sessions by IM injections at an interval of 1 one week to male and female NZW rabbits. We noted that germinal centers with increased lymphocytic cellularity (i.e., follicular hyperplasia) seen in the regional lymph nodes were sustained throughout the recovery phase, in addition to the detection of SARS-CoV-2 specific IgG antibodies in the sera of rabbits in the recovery phase, and it demonstrated a long-lasting immunogenic response against RBD.

The Company is expected to advance toward an anticipated first-in-human Phase I clinical trial of its proprietary DYAI-100 vaccine candidate in 2022, however, there is no assurance that the Company will be able to carry out this trial. The main goal of the DYAI-100 Phase I clinical trial is to demonstrate that a protein produced from the Company's proprietary and patented C1-cells can be safely used in humans which we anticipate will help to accelerate the C1-cell protein production platform's adoption, use and commercialization and to serve as a proof of concept for the development of potential next generation multivariant COVID-19 vaccine candidates.

Current data suggests that many of the so-called first-generation vaccines remain highly effective against existing several of the variants of concern, however the Omicron variant and sub variants being potential exceptions – particularly against severe disease. However, it's possible a new variant will emerge that may overcome the current vaccines-induced protection to some degree, with the emergence of the Omicron variant only highlighting this risk. The C1-cell protein production platform can effectively support the global immunization strategies that are needed against emerging SARS-CoV-2 variant of concerns. The Company can rapidly insert RBD variant's genes into the same C1-cell line (same genotype) in approximately 60 days. Thus far, in addition to the original Wuhan (SARS-CoV-2), the following variants have been successfully produced; Alpha (UK), Beta (SA) Gamma (BR) Delta (Ind) and Omicron (B.1.1.529). One of the commercial Dyadic goals is to demonstrate effective capability to rapidly produce different combinations of multivalent COVID-19 vaccines, which could protect against several variants of concern at once.

The Company is evaluating a number of other approaches where its proprietary and patented C1-cell protein production platform can be used to help develop and manufacture COVID-19 vaccines that have the potential to provide greater efficacy and protection from emerging SARS-CoV-2 variants, including multivalent and nanoparticle vaccine designs.

Janssen Agreement

On December 16, 2021, the Company entered into a Research, License, and Collaboration Agreement (the "Janssen Agreement") for the manufacture of therapeutic protein candidates using its C1-cell protein production platform with Janssen Biotech, Inc., one of the Janssen Pharmaceutical Companies of Johnson & Johnson ("Janssen"). Pursuant to the terms of the Janssen Agreement:

(i) Janssen will pay Dyadic an upfront payment of $500,000 for a non-exclusive license to utilize the C1-cell protein production platform to develop C1 production cell lines for the manufacturing of Janssen's therapeutic protein candidates against several biologic targets,

(ii) Janssen will provide R&D funding up to €1.6 million to develop and assess C1 production cell lines for its product candidates,

(iii) Janssen will have an option to pay a mid-seven figure payment for an exclusive license from Dyadic to use the C1-cell protein production platform for the manufacturing of therapeutic proteins directed to one specific target, and upon exercise, Janssen would have the right to add additional non-exclusive targets to the collaboration and Dyadic would complete the technology transfer of the C1-cell protein production platform, fully enabling Janssen to internally develop C1 cell lines against licensed targets, and upon successful completion of the technology transfer, Dyadic is eligible to receive a milestone payment in the low seven figures,

(iv) for each product candidate, Dyadic could receive development and regulatory milestones in the mid-seven figures, and

(v) Dyadic could receive aggregate commercial milestone payments in the low nine figures per product, subject to a limit on the number of such products, with the amount depending on the cumulative amount of active pharmaceutical ingredient produced by Janssen for each product manufactured with Dyadic's C1-cell protein production platform.

Janssen may terminate the Janssen Agreement in its entirety, or on a country-by-country or other jurisdiction-by-other jurisdiction basis, for any or no reason, upon 90 days' prior written notice to Dyadic.

IDBiologics, Inc.

On July 8, 2020, the Company entered into a Common Stock Purchase Agreement (the "IDBiologics Agreement") with IDBiologics, Inc ("IDBiologics"). IDBiologics is a private biotechnology company focused on the development of human monoclonal antibodies for the treatment and prevention of serious infectious diseases. The Company was founded in 2017 and seeded by Vanderbilt University Medical Center in response to the repeated threats of epidemics around the world, including Ebola in West Africa and Zika in the Americas. IDBiologics is developing a portfolio of monoclonal antibodies against SARS-CoV-2, influenza and Zika viruses.

Pursuant to the term of the IDBiologics Agreement, on July 8, 2021, Dyadic received 129,661 shares of IDBiologics' common stock, which represent 0.37% of IDBiologics' outstanding equity, upon the completion of a feasibility study performed by Dyadic. Dyadic provided services including the use of Dyadic's C1-cell protein production platform to express a SARS-CoV-2 monoclonal antibody which IDBiologics licensed from the Vanderbilt Vaccine Center.

On April 25, 2021, the Company entered into a project agreement to provide additional research services to IDBiologics.

Alphazyme Sub-License

On May 5, 2019, the Company entered into a sub-license agreement (the "Alphazyme Sub-License Agreement") with Alphazyme, LLC ("Alphazyme"). Under the terms of the Alphazyme Sub-License Agreement, the Company has granted to Alphazyme, subject to the terms of the license agreement entered into between the Company and Danisco US, Inc. on December 31, 2015, a sub-license to certain patent rights and know-how related to Dyadic's proprietary C1-cell protein production platform for the purpose of commercializing certain pharmaceutical products that are used as reagents to catalyze a chemical reaction to detect, measure, or be used as a process intermediate to produce a nucleic acid as a therapeutic or diagnostic agent.

On June 24, 2020, the Company entered into an Amended and Restated Non-Exclusive Sub-License Agreement (the "Amended Sub-License Agreement") with Alphazyme. Pursuant to the Amended Sub-License Agreement and in consideration of Dyadic's transfer of its C1-cell protein production platform, Alphazyme issued 2.50% of the Class A shares of Alphazyme to Dyadic, and Dyadic became a party to the Alphazyme Limited Liability Company Agreement pursuant to which the Company has agreed to certain customary rights, covenants, and obligations. In addition, and subject to achieving certain milestones, Alphazyme is obligated to pay a potential milestone payment and royalties, based on net sales, if any, which incorporate Dyadic's proprietary C1-cell protein production platform.

On December 1, 2020, the Company entered into an Amended and Restated Limited Liability Company Agreement with Alphazyme (the "Amended Alphazyme LLC Agreement"). Under the Amended Alphazyme LLC Agreement, Alphazyme obtained an additional capital contribution and Dyadic's ownership was diluted to 1.99%.

Other Third Parties Collaborations

- **NIIMBL Coronavirus Grant** – Dyadic received 1 of 32 project grants awarded by the National Institute for Innovation in Manufacturing Biopharmaceuticals ("NIIMBL") funded through the White House's American Rescue Plan ("ARP"). Under the NIIMBL grant, the Company will receive up to $690,000 in funding to engineer the Company's proprietary and patented C1-cell thermophilic fungal (*Thermothelomyces heterothallica*) protein production platform to produce two different coronavirus antibodies.
- **C1 COVID-19 vaccine collaborations**
  - **South Africa, Rubic Consortium** – a collaboration to develop end-to-end solutions for vaccine discovery, development, and manufacture for the African market.
    - Tech transfer of C1-cell protein production platform was completed. Rubic has begun engineering and growing C1-cells to prepare for the development of affordable vaccines and drugs for the African continent.
    - Preparations are ongoing for potential clinical trial application (CTA) submission to South African Health Products Regulatory Authority (SAPHRA) of C1 produced DYAI-100 COVID-19 vaccine candidate.
  - **India, Syngene** – is a global contract development and manufacturing organization (CDMO). The initial collaboration was to explore the development of a COVID-19 vaccine, and for Syngene to further evaluate the potential of developing a differentiated biomanufacturing platform for vaccines, antibodies and other therapeutic proteins based on the C1-cell protein production platform. Collaboration with Syngene continues to progress.
  - **Sorrento Therapeutics** – Due to a disagreement between the parties concerning the timing, and terms and conditions, for the entry into a definitive license agreement, both parties mutually agreed not to proceed.
  - **Epygen** – In 2020, the Company entered into a non-exclusive technology usage agreement with Epygen Biotech of India, who plans to conduct clinical trials in India using DYAI-100, or one or more of the COVID-19 variant vaccines. Epygen recently procured the approval for funding from the government of India to move towards vaccine production technology across early-stage Phase 1 and Phase 2 human clinical trials. In order for Epygen to receive the government funding, it must contribute approximately 25% of the total funding from other sources.

- **University of Oslo** – During 2021, Dyadic expanded its influenza vaccine collaboration with the University of Oslo.
  - Mice vaccinated with C1 antigen combined with an adjuvant (AS03) challenged with a lethal dose of the homologous influenza A/H1N1 showed no clinical signs, no body weight loss, and were fully protected.
  - Other mice trials are ongoing and scheduled with C1 produced antigens for influenza and SARS-CoV-2.
- **Toxicology Study** - Dyadic completed a successful toxicology study of its DYAI-100 COVID-19 vaccine candidate. A manuscript of the results showing safety and persistence was peer reviewed and is awaiting publication in the scientific journal "Toxicologic Pathology".
- **Peer Reviewed Journals** - Manuscripts were published in three (3) peer reviewed scientific journals "Vaccines", "Analytical and Bioanalytical Chemistry" and "Vaccine" relating to antigens produced from C1-cells showing safety and efficacy in animal models against influenza and SARS-CoV-2.

(4) Other Markets

Dyadic introduced a novel method to produce metabolites, such as synthetic cannabinoids and precursors utilizing the C1-cell protein production platform. Two patents are pending to potentially expand Dyadic's portfolio of offerings. The Company is exploring new segments and leveraging existing expertise within industrial enzymes to which Dyadic's proprietary technologies may be applied.

The Company believes that certain attributes of C1, together with its continuing platform research and development programs, has the potential to create attractive research, licensing, partnering/collaboration and other revenue and funding opportunities in the animal and human biopharmaceutical industries and other markets. The third-party funded research projects discussed above, and others that we are seeking, will defray some of our research expenses as we continue to develop the full potential of our C1-cell protein production platform. We will continue to pursue research collaboration opportunities to potentially commercialize C1-based products.

Employees and Human Capital

As of December 31, 2021, we had 7 employees located in the United States, and 4 key consultants located in the United States and Europe. None of our employees are represented by a labor union, and we consider our employee relations to be good.

Dyadic appointed Joseph Hazelton as the Chief Business Officer in November of 2021. Mr. Hazelton was brought on to lead Dyadic's transition from research and development activities into commercialization endeavors. With over 20 years in the pharmaceutical industry, Mr. Hazelton brings extensive commercial, operational, and leadership experience to expand Dyadic's business development opportunities for the C1-cell protein production platform across the company's core verticals of Human Health, Animal Health, and Industrial Enzymes.

The Company believes that its success depends on the ability to attract, develop, retain and incentivize our existing and new employees, consultants, and key personnel. It also believes that the skills, experience and industry knowledge of its key personnel significantly benefits its operations and performance. The principal purposes of equity and cash incentive plans are to attract, retain and reward personnel through the granting of stock-based and cash-based compensation awards, in order to increase shareholder value and the success of our company by motivating such individuals to perform to the best of their abilities and achieve our objectives.

Employee health and safety in the workplace is one of the Company's core values. The COVID-19 pandemic has underscored the importance of keeping employees safe and healthy. In response to the COVID-19 pandemic, the Company has taken actions aligned with the World Health Organization and the Centers for Disease Control and Prevention in an effort to protect the Company's workforce so they can more safely and effectively perform their work. These actions include shutting down its headquarters for some months during 2020, wearing facemasks in common areas in the office, and allowing employees to work from home.

Employee levels are managed to align with the pace of business and management believes it has sufficient human capital, along with the third-party research organizations with who we have collaboration agreements, to operate its business successfully.

Climate Change

We believe that neither climate change, nor governmental regulations related to climate change, have had, or are expected to have, any material effect on our operations.

Corporate Information

Founded in 1979 by Mark A. Emalfarb, our Chief Executive Officer, Dyadic has focused on the development of C1-cell protein production platform since 1992, refining and optimizing the C1 to become a successful gene expression and protein production system.

Currently, Dyadic is a global biotechnology company with operations in the United States and a satellite office in the Netherlands and it utilizes a number of third-party consultants and research organizations to carry out the Company's activities. Dyadic was incorporated in Delaware in September 2002. Our principal corporate offices are located at 140 Intracoastal Pointe Drive, Suite 404, Jupiter, FL 33477; telephone number (561) 743-8333; website www.dyadic.com.

Dyadic is required to file annual, quarterly and current reports, proxy statements and other information with the U.S. Securities and Exchange Commission ("SEC"). Investors may read and copy any document that Dyadic files, including this Annual Report on Form 10-K, at the SEC's Public Reference Room at 100 F Street, N.E., Room 1580, Washington, DC 20549. Investors may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. In addition, the SEC maintains an Internet site at www.sec.gov that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC, from which investors can electronically access Dyadic's SEC filings.

We maintain a website at www.dyadic.com. From time to time, the Company may use its website as a channel of distribution of material Company information, and financial and other material information regarding the Company is routinely posted on and accessible at http://dyadic.com/investors. We make available free of charge on or through our website our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, reports filed pursuant to Section 16 and any amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), as soon as reasonably practicable after we electronically file or furnish such materials to the SEC. In addition, we have posted the charters for our Audit Committee, Compensation Committee, and Nominating and Governance Committee, as well as our Board Governance Principles and Code of Conduct, on our website under the heading "Investors", and sub-heading "Corporate Governance."

Item 1A. Risk Factors

Investing in our common stock involves a high degree of risk. You should carefully consider the following material risks, together with the other matters described in this Annual Report and in our financial statements and the related notes thereto in evaluating our current business and future performance. We cannot assure you that any of the events discussed in the risk factors below will not occur. If we are not able to successfully address any of the following risks or difficulties, we could experience significant changes in our business, operations and financial performance. In such circumstances, the trading price of our common stock could decline, and in some cases, such declines could be significant, and you could lose part or all of your investment. In addition to the risks described below, other unforeseeable risks and uncertainties or factors that we currently believe are immaterial may also adversely affect our operating results, and there may be other risks that may arise in the future. Certain statements contained in this Annual Report (including certain statements used in the discussion of our risk factors) constitute forward-looking statements. Please refer to the section entitled "Cautionary Note Regarding Forward-Looking Statements" appearing on page 4 of this Annual Report for important limitations and guidelines regarding reliance on forward-looking statements.

Risk Factor Summary

The following is a summary description of the material risks and uncertainties to which we may be exposed. Each of these risks could adversely affect our business, financial condition and results of operations, and any such effects may be material. These and other risks are more fully described after this summary description.

Risks Related to Our Business and Financial Condition

- We may not succeed in implementing our business strategy.
- We have a history of net losses, and we may not achieve or maintain profitability.
- We could fail to manage our growth, which would impair our business.
- Our revenue growth depends in part on market and regulatory acceptance of the C1-cell protein production platform and our other technologies to develop and manufacture animal and/or human biopharmaceutical products and non-pharmaceutical products.
- We must continually offer new products and technologies.
- We may fail to commercialize the C1-cell protein production platform or our other technologies for the expression of therapeutic proteins, antibodies, vaccines, and metabolites or other non-pharmaceutical biologic products.
- If our competitors develop technologies and products more quickly and market more effectively than our product candidates, our commercial opportunity will be reduced or eliminated.
- Alternative technologies may not require microbial or other cell produced proteins, such as our proprietary C1 cells.
- Our SARS-CoV-2 vaccine product candidates are at the preclinical stage and have not been approved for sale. We have not conducted substantial research and development, or cGMP manufacturing of drug substance and drug product, for a vaccine product candidate in the past, and we may be unable to produce a vaccine that can be used to successfully prevent the SARS-CoV-2 virus or its variants of concern, in a timely and economical manner, if at all.
- The results of nonclinical studies and early-stage clinical trials may not be predictive of future results.

Risks Related to Dependence on Third Parties

- We are dependent on collaborations with third parties, and if we fail to maintain or successfully manage existing, or enter into new, strategic collaborations, we may not be able to develop and commercialize many of our technologies and products and achieve profitability. We have a small number of research collaborations, and the nonperformance or loss of any collaboration could have a material adverse effect on our business.
- We have limited or no control over the resources that any collaborator or licensee may devote to our programs, and reductions in collaborators' R&D budgets may affect our businesses.
- We heavily rely on contracts with third-party contract research organizations ("CROs") and other third-party service providers to conduct our research and development, pre-clinical, CMC and cGMP manufacturing, fill and finish, and potential clinical trials, which may not be available to the Company on commercially reasonable terms or at all.
- Conflicts with the CROs, other service providers, collaborators and/or licensees could harm our business.
- We rely on our collaborators and other third parties to deliver timely and accurate information in order to accurately report our financial results as required by law.

Risks Related to Government Regulations and Environmental, Social, and Governance Issues

- Potential future regulations limiting our ability to sell genetically engineered products could harm our business.
- Public views on ethical and social issues may limit use of our technologies.
- Our results of operations may be adversely affected by environmental, health and safety laws, regulations and liabilities.
- Increasing scrutiny and changing expectations from customers, regulators, investors, and other stakeholders with respect to our environmental, social and governance practices may impose additional costs on us or expose us to new or additional risks.
- We have no experience submitting applications to the FDA or similar regulatory authorities in the past and could be subject to lengthy and/or unfavorable regulatory proceedings.

Risks Relating to Intellectual Property

- Inability to protect our intellectual property could harm our ability to compete.
- Litigation or other proceedings or third-party claims of intellectual property infringement could require us to spend significant time and resources and could prevent us and our collaborators from commercializing our or their technologies and products or negatively impact our stock price.
- Confidentiality agreements with employees and others may not adequately prevent disclosures of trade secrets and other proprietary information.

Risks Related to Our Common Stock

- The price of our shares of common stock is likely to be volatile, and you could lose all or part of your investment.
- Our quarterly and annual operating results may be volatile.
- We do not expect to pay cash dividends in the future.
- Our anti-takeover defense provisions may deter potential acquirers and depress our stock price.
- Concentration of ownership among our existing officers, directors and principal stockholders may prevent other stockholders from influencing significant corporate decisions and depress our stock price.
- Future issuances of shares of our common stock may negatively affect our stock price.
- The Company is exposed to credit risk and fluctuations in the values of its investment portfolio.
- We are a smaller reporting company, and the reduced disclosure requirements applicable to smaller reporting companies may make our common stock less attractive to investors.

General Risk Factors

- We may need substantial additional capital in the future to fund our business.
- Changes in global economic and financial markets may have a negative effect on our business.
- We face risks related to health epidemics, pandemics and other widespread outbreaks of contagious disease, pandemics, epidemics or other biological threats, such as the ongoing COVID-19 pandemic, that could significantly disrupt our operations and have a material adverse effect on our business, employees, directors, consultants, collaborators and other third parties, including business development activities and research and development projects conducted by third party contract research organizations parties.
- Our sales and operations are subject to the risks of doing business internationally.
- If we lose key personnel, including key management or board members, or are unable to attract and retain additional personnel, it could delay our technology and product development programs and harm our R&D efforts, and we may be unable to pursue research funding, licenses and other forms of collaborations or develop our own products.
- We may be sued for product liability.
- Foreign currency fluctuations could adversely affect our results.
- Our ability to use our net operating loss carryforwards to offset future taxable income may be subject to certain limitations.
- We may make acquisitions, investments and strategic alliances that may use significant resources, result in disruptions to our business or distractions of our management, may not proceed as planned, and could expose us to unforeseen liabilities.
- We rely significantly on information technology and any failure, inadequacy, interruption or security lapse of that technology, including any cybersecurity incidents, could harm our ability to operate our business effectively.

Risks Related to Our Business and Financial Condition

We may not succeed in implementing our business strategy.

In connection with the December 31, 2015 sale of substantially all of the assets of our industrial technology business to Danisco (the "DuPont Transaction"), Danisco obtained certain rights to utilize the C1-cell protein production platform for development and production of pharmaceutical products, for which it will make royalty payments to Dyadic upon commercialization. At the same time, Dyadic retained the co-exclusive rights to the C1-cell protein production platform for use in all human and animal pharmaceutical applications, with Dyadic currently having the exclusive ability to enter into sub-license agreements in that field (subject to the terms of the license and certain exceptions). We cannot predict whether Danisco intends to or will pursue the use of the C1-cell protein production platform to develop or manufacture pharmaceutical products or whether or when we might receive royalties from Danisco. In certain circumstances, Dyadic may owe a royalty to either Danisco or certain licensors of Danisco, depending upon whether Dyadic elects to utilize certain patents owned or licensed by Danisco. Consequently, our business has changed dramatically as compared to the past, as we no longer have any product revenue related to our enzyme business. We have begun to apply the C1-cell protein production platform in the biopharmaceutical market, which has higher risks and a higher barrier to entry.

As we attempt to adapt the C1-cell protein production platform and our other technologies for use in the biopharmaceutical and other markets, our business is subject to the execution, integration, and research and development risks that early-stage companies customarily face with new technologies, products and markets. These risks relate to, among other things, our ability to successfully further develop the C1-cell protein production platform and our other technologies, products and processes, assemble and maintain adequate production and research and development ("R&D") capabilities, comply with regulatory requirements, construct effective channels of distribution and manage growth. We have encountered and will continue to encounter risks and difficulties frequently experienced by early-stage companies in expanding and upgrading our intellectual property, regulatory, marketing, sales and R&D capabilities, improving our accounting and financial reporting and internal controls infrastructure, and adapting to the rapidly evolving industries in which we operate. Additionally, we are subject to competition from much larger companies with more resources than we have. Also, the market for developing and manufacturing pharmaceutical proteins produced from a filamentous fungus, such as the C1 fungus, is a market that is not yet established and is subject to a high level of regulatory hurdles from the U.S. Food and Drug Administration (the "FDA") and other governmental bodies, and there is a risk that such technologies will not be adopted by the pharmaceutical industry or governmental agencies and therefore not succeed and/or not grow at the rates projected or at all.

We have not yet commercialized any products for the biopharmaceutical market, and we may never be able to do so.

We do not know when or if we and/or our current and/or future collaborators and licensees will complete any of our or their product development efforts, obtain regulatory approval for any product candidates incorporating our technologies or successfully commercialize any approved products. Even if we and/or our licensees and collaborators are successful in developing products that are approved for marketing, we and they will still require that these products gain regulatory approval and market acceptance. The biopharmaceutical industry is a high-risk industry in that even if we are successful at expressing certain proteins, these proteins may fail to be advanced or approved for use or sale for many reasons including their characteristics, biological activity, bio comparability, bio similarity, stability, glycosylation structures, containments, purity, performance, safety and regulatory reasons.

Because of the numerous risks and uncertainties associated with pharmaceutical product development, we are unable to predict the timing or amount of increased expenses or when, or if, we will be able to achieve certain technology, product and/or commercial milestones, access fees and royalties, launch products and/or processes, or achieve profitability. In addition, our expenses could increase if we are required by the FDA or other domestic and foreign regulatory authorities to perform studies or trials in addition to those currently expected, or if there are delays in completing additional safety studies such as toxicology and pathogenicity studies, clinical trials, preclinical studies, animal or human studies or the development of any of our or our collaborators' product candidates.

We have a history of net losses, and we may not achieve or maintain profitability.

As of December 31, 2021, we have an accumulated deficit of approximately $63.7 million. Our profitability has strongly relied on, and will be even more reliant going forward on, third party industry and government research funding, licensing partnerships and other forms of collaborations. We believe that it is likely that if we do not sign license agreements or other forms of collaborations, we will incur losses because of our planned levels of R&D and additional general and administrative expenditures that we believe is necessary to operate our business and further develop the C1-cell protein production platform and our other technologies for use in the pharmaceutical and non-pharmaceutical industries. The amount of our future net losses will depend, in part, on the rate of increase in our expenses along with other potential cost of unforeseen circumstances, our ability to generate research funding, government grants, receipt of access fees, milestones, royalty and other payments, and whether we are able to generate revenues by entering into license agreements or other forms of collaborations, launch new products and/or processes from future licensees or collaborators, and our ability to raise additional capital. The net losses we anticipate incurring over the next several years will have an adverse effect on our stockholders' equity and working capital.

The R&D efforts needed to enhance and leverage the C1-cell protein production platform and our other technologies for use in developing and manufacturing human and animal biopharmaceuticals and other non-pharmaceutical products will require significant funding and increased staffing; therefore, we expect near-term operating and research expenses to continue, and maybe even accelerate, as we further develop our research and business plans, and our goals and objectives. Consequently, we will require significant additional revenue to achieve profitability. We cannot provide assurance that we will be able to generate any revenues from our focus and efforts as we intend to apply the C1-cell protein production platform and our other technologies into the biopharmaceutical and non-pharmaceutical industries. If we fail to enter into new license agreements or other forms of collaborations or generate revenues and profit from additional research projects and government grants, the market price of our common stock will likely decrease. Further regulatory complications, competition from other technologies, or delays in our research programs and the adoption and use of the C1-cell protein production platform and our other technologies by the biopharmaceutical and non-pharmaceutical industries may force us to reduce our staffing and research and development efforts, which may further affect our ability to generate cash flow.

We could fail to manage our growth, which would impair our business.

We will need to take the following steps, among others, to manage our growth. If we fail to achieve one or more of these, it could have a material adverse effect on our business, financial condition and results of operations.

- Balance our cash burn with technology and product development;
- Maintain and add additional CROs, other third-party service providers or other technology collaborators;
- Maintain and add additional collaborators, strategic partners technology licensees or other forms of structures;
- Recruit, hire and maintain the required employees necessary to maintain and grow our business and to advance our technologies and products;
- Achieve technical and commercial success in our research and product development programs;
- Access required manufacturing capacity;
- Access additional capital;
- Recruit and maintain consultants, board members and scientific advisory board members; and
- Manage scientific risks and uncertainties that may arise during our R&D and regulatory programs.

Our revenue growth depends in part on market and regulatory acceptance of the C1-cell protein production platform and our other technologies to develop and manufacture animal and/or human biopharmaceutical and non-pharmaceutical products.

The success of our biopharmaceutical business will depend on our ability to develop, register, and introduce similar, new and improved technologies and products in a timely manner, at significantly lower manufacturing costs that address the evolving requirements of the pharmaceutical industry and potential customers. There is no assurance that the C1-cell protein production platform or any product expressed from C1, or our other technologies, will perform the same or better, save our customers money relative to existing gene expression technologies or those of our competitors, provide our customers with other benefits, obtain governmental safety and regulatory approvals, be registered or gain market acceptance. If we fail to develop similar, new and better performing technologies, products and processes at significantly lower manufacturing costs, make fermentation yield improvements on our existing production processes, generate the necessary safety and regulatory data or gain registration and market acceptance of the C1-cell protein production platform, or our other technologies, products or processes, we could fail to recoup our R&D investments and fail to capitalize on potential opportunities or gain market share from our competitors. Any failure, for technological, quality, safety, regulatory, or other reasons, to develop and launch improved technologies and new products, could negatively impact our business, financial condition and results of operation.

The dynamic and conservative nature of the biopharmaceutical industry, the unpredictable nature of the product development process and the time and cost of new technology adoption in the biopharmaceutical industry may affect our ability to meet the requirements of the marketplace or achieve market and/or regulatory acceptance.

The expenses or losses associated with unsuccessful technology and product development activities or lack of market acceptance of our new technologies and products could seriously harm our business, financial condition and results of operations.

We must continually offer new products and technologies.

The biopharmaceutical industry is characterized by rapid technological change, and the area of gene and protein research and platform development is a rapidly evolving field. Our future success will depend on our ability to maintain a competitive position with respect to technological advances in terms of product and process quality, stability, safety, productivity and cost. Rapid technological development by others could cause our products and technologies to become obsolete and could have a material adverse effect on our business, financial condition and results of operations.

We may fail to commercialize the C1-cell protein production platform or our other technologies for the expression of therapeutic proteins, antibodies, vaccines, and metabolites or other non-pharmaceutical biologic products.

We have not yet developed any C1-based biopharmaceutical products, conducted the necessary safety, efficacy, cost and regulatory studies, or completed the commercialization of any therapeutic proteins, antibodies and vaccines.

To date, drug companies have developed and commercialized only a small number of gene-based products in comparison to the total number of drug molecules available in the marketplace. Our biopharmaceutical business should be evaluated as having the same risks as those inherent to early-stage biotechnology companies because the application of the C1-cell protein production platform for the expression of pre-clinical and clinical quantities of therapeutic proteins, antibodies and vaccines is still in early development.

Successful development of the C1-cell protein production platform for biopharmaceutical and non-pharmaceutical purposes will require significant research, development and capital investment, including testing, to prove its safety, efficacy and cost-effectiveness. In general, our experience has been that each step in the process has been longer and costlier than originally projected, and we anticipate that this is likely to remain the case with respect to the continuing development efforts of our biopharmaceutical and non-pharmaceutical business.

If our competitors develop technologies and products more quickly and market more effectively than our product candidates, our commercial opportunity will be reduced or eliminated.

Any biopharmaceutical products we or our current or collaborators or licensees develop through the C1-cell protein production platform, or through our other technologies, will compete in highly competitive and regulated markets. Many of the organizations competing with us in the market for such products have more capital resources, larger R&D and marketing staff, facilities and capabilities, and greater experience in research and development, regulatory approval, manufacturing and commercialization of technology and products. Accordingly, our competitors may be able to develop technologies and products more rapidly. If a competitor develops superior technology or products, or more cost-effective alternatives to our and our collaborators' or licensees' technologies, products or processes, it could have a material adverse effect on our business, financial condition and results of operations. Well-known and highly competitive biotechnology companies offer comparable or alternative technologies for the same products and services as our biopharmaceutical and non-pharmaceutical business. We anticipate that we and our current or future collaborators and licensees will continue to encounter increased competition as new companies enter these markets and as the development of biological processes and products evolves.

Alternative technologies may not require microbial or other cell produced proteins, such as our proprietary C1 cells.

Research is being conducted with cell or gene-based therapies and other technologies that offer a possible alternative to producing proteins as they are being produced today based on microbial, organic matter containing Carbon, Hydrogen, and Oxygen or other organisms, such as our proprietary C1 cells. Alternative methods may allow genes to be directly inserted into cells that can be implanted into animals and humans directly, displacing the need for the existing methods used for the development of biologic vaccines and drugs. If they are successful, these new methods may supplant or greatly reduce the need for microorganisms, Carbon, Hydrogen, and Oxygen or other organisms, including our C1 cells, to produce these proteins externally as the injected cells in animals and humans may be able to do so internally.

Our SARS-CoV-2 vaccine product candidates are at the preclinical stage and have not been approved for sale. We have not conducted substantial research and development or cGMP manufacturing of drug substance and drug product, for a vaccine product candidate in the past, and we may be unable to produce a vaccine that can be used to successfully prevent the SARS-CoV-2 virus or its variants of concern, in a timely and economical manner, if at all.

Our SARS-CoV-2 vaccine development program is in the early stages of research and development. Limited data exist regarding the safety and efficacy of our vaccine product candidates, and we must conduct a substantial amount of additional research, development and clinical testing before any regulatory authority will approve our vaccine product candidates. The success of our efforts to develop and commercialize our product candidates could fail for a number of reasons. For example, regulations have and continue to change in South Africa and other countries which may affect the design of our COVID-19 vaccine candidate, and our ability to carry out our anticipated Phase 1 clinical trial. In addition, we may not receive the necessary documentation, data, or other required information, materials, and support from BTG Israel or other third parties we are working with that is needed to submit and ultimately receive regulatory approval to conduct the anticipated Phase 1 clinical trial in South Africa or in an alternative country. As a result, we could experience delays in product development and clinical trials or unsatisfactory clinical trial results. Moreover, adverse events, or the perception of adverse events, relating to vaccine product candidates and delivery technologies may negatively impact our ability to develop commercially successful products and also may lead to greater government regulation, which could have a material effect on our ability to develop and market our SARS-CoV-2 vaccine product candidates.

Uncertainties exist surrounding the longevity and severity of COVID-19 as a global health concern. The success of our efforts to develop and commercialize our product candidates could fail for a number of reasons. Accordingly, we may be unable to produce a vaccine that successfully targets SARS-CoV-2 in a timely and economical manner, if at all. For example, we expect to commit significant financial resources and personnel to the development of SARS-CoV-2 vaccine product candidates, which may cause delays in or otherwise negatively impact our other product candidate development program. The outcome of any research and development program is highly uncertain. Only a small fraction of biotechnology and vaccine development programs ultimately result in commercial products or even product candidates, and a number of events could delay our development efforts and negatively impact our ability to obtain regulatory approval for, and to manufacture, market and sell, a vaccine. Additionally, our ability to develop an effective vaccine will depend on our ability to work on an accelerated timeline, with limited access to financial resources beyond those that we currently possess, and in competition with a significant number of better-funded and more experienced vaccine-development companies. Moreover, if the COVID-19 pandemic is effectively contained or the risk of further spread is diminished or eliminated before we can successfully develop, manufacture and commercialize SARS-CoV-2 vaccine products, we may be unable to identify strategic partners willing to work with and support us in our development efforts and, even if we obtain regulatory approval, the market that we anticipate for this product candidate may not exist or may be much smaller than we previously anticipated. Alternatively, even if a market exists, our vaccine product candidates could be found to be ineffective or unsafe, or otherwise fail to receive necessary regulatory clearances. Our vaccine product candidates, even if safe and effective, could be difficult to manufacture on a large scale or uneconomical to market, or our competitors could develop superior products more quickly and efficiently or more effectively market their competing products. Accordingly, our inability to develop a commercially-successful vaccine product will materially harm our business.

The results of nonclinical studies and early-stage clinical trials may not be predictive of future results.

The results of nonclinical studies may not be predictive of the results of clinical trials, and the results of any early-stage clinical trials we commence may not be predictive of the results of the later-stage clinical trials. Vaccine and drug candidates in later stages of clinical trials may fail to show the desired safety and efficacy despite having progressed through nonclinical studies and initial clinical trials. There is a high failure rate for drugs proceeding through clinical trials, and a number of companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in clinical development even after achieving promising results in earlier studies. There can be no assurance that any of our current or future clinical trials will ultimately be successful or support further clinical development of any of our vaccine and drug candidates. Even if our clinical trials are completed, the results may not be sufficient to obtain regulatory approval of any products. Any such setbacks in our clinical development could have a material adverse effect on our business and operating results.

Risks Related to Dependence on Third Parties

We are dependent on collaborations with third parties, and if we fail to maintain or successfully manage existing, or enter into new, strategic collaborations, we may not be able to develop and commercialize many of our technologies and products and achieve profitability. We have a small number of research collaborations, and the nonperformance or loss of any collaboration could have a material adverse effect on our business.

Our R&D revenue is generated from a small number of research collaborations. These collaborations could be delayed or be discontinued, as they have in the past, at any time with little advance notice. If these research collaborations are lost or do not perform as expected, it could have a material adverse effect on our business, financial condition and operating results.

Our ability to enter into, maintain and manage collaborations in our target markets is fundamental to the success of our business. We currently rely on, and expect to continue to rely on, our current and future partners, in part, for research and development, manufacturing and distribution, sales and marketing services, and application and regulatory know how. In addition, we intend to enter into additional collaborations to conduct research, develop, produce, market, license and sell our technologies and products and processes we anticipate developing. However, we may not be successful in entering into collaborative arrangements with third parties. Any failure to enter into such arrangements on favorable terms could delay or hinder our ability to develop and commercialize our technologies, products and processes and could increase our costs of research and development and commercialization.

We have limited or no control over the resources that any collaborator or licensee may devote to our programs, and reductions in collaborators' R&D budgets may affect our businesses.

Any of our current or future collaborators or licensees may breach or terminate their agreements with us or otherwise fail to perform and conduct their required activities successfully and in a timely manner. Our collaborators or licensees may elect not to develop products arising out of our collaborative or license arrangements or may choose not to devote sufficient resources to the development, manufacture, market or sale of these products. If any of these events occur, we or our collaborators or licensees may not develop our technologies or commercialize our or their products.

Fluctuations in the R&D budgets of government agencies, our customers, licensees, collaborators and research partners could have a significant impact on the interest in and demand for our technology. Our businesses could be seriously damaged by significant decreases in life sciences and/or pharmaceutical R&D expenditures by government agencies and existing and potential partners.

We heavily rely on contracts with third-party contract research organizations ("CROs") and other third party service providers to conduct our research and development, pre-clinical, CMC and cGMP manufacturing, fill and finish, and potential clinical trials, which may not be available to the Company on commercially reasonable terms or at all.

As a result of the DuPont Transaction, we no longer own a research and development laboratory and we became dependent upon the performance and research capacity of a number of third-party contract research organizations and other service providers to conduct our research and development projects, pre-clinical, CMC and cGMP manufacturing, fill and finish, and potential clinical trials, which include services and programs in connection with the modification and enhancement of the Company's C1-cell protein production platform and to support our business development efforts for C1's use in biopharmaceutical applications. The licensing and service arrangements with these third parties are not guaranteed to be obtained, renewed or continued on reasonable terms, if at all. The Company may be unable to obtain, maintain or expand its access to third party CROs and other service providers to conduct these services. Failure to obtain, maintain and expand access to certain third party CROs and other service providers could have a material adverse impact on the Company's research projects, financial condition and operating results. In addition, from time to time there are disagreements with such third parties that if not resolved can have a material adverse effect on our business, financial condition and operating results.

We are heavily dependent upon the availability and performance of third-party research organizations. If we require research capacity and/or capabilities and are unable to obtain it in sufficient quantity, and quality or at terms and conditions that are acceptable to the Company or our third party collaborators, we may not be able to offer our technologies or products for license, or sale, or we may be required to make substantial capital investments to build out that capacity or to contract with other research organizations on terms that may be less favorable than our current arrangements. In addition, if we contract with other research organizations, we may experience delays of several months in qualifying them or in starting up research programs at these facilities, which could harm our relationships with our licensees, collaborators or customers, and we may be required to make a capital investment in connection with these arrangements. This could have a material adverse effect on our business, revenues or operating results.

Additionally, if we were to be unsuccessful in retaining a CRO with the requisite experience and skills we require and were required to build our own research facility, it could take a year or longer before such owned research facility were able to be brought online to carry out the necessary technology and product development efforts of the Company.

Conflicts with the CROs, other service providers, collaborators and/or licensees could harm our business.

An important part of our strategy includes involvement in proprietary research programs. We may pursue opportunities in the pharmaceutical field that could conflict with those of our collaborators and licensees. Moreover, disagreements with Danisco, our current and/or future CROs, other service providers, collaborators or licensees could develop over rights to our intellectual property, over further licensing of our technologies to other parties in certain pharmaceutical fields, or for other reasons. Any conflict with Danisco, our current and/or future CROs, other service providers, collaborators or licensees could reduce our ability to obtain future collaboration agreements and negatively impact our relationship with existing collaborators or licensees, which could reduce our revenues and profits.

Some of our current and/or future CROs, other service providers, collaborators and/or licensees could also become competitors in the future. Our current and/or future CROs, other service providers, collaborators and/or licensees could develop competing technologies or products, preclude us from entering into collaborations or license agreements with their customers, fail to obtain timely regulatory approvals, terminate their agreements with us prematurely or fail to devote sufficient resources to the development and commercialization of their technology and products and processes. Any of these developments could harm our technology development and value, product development efforts, revenue, profits and overall business.

We rely on our collaborators and other third parties to deliver timely and accurate information in order to accurately report our financial results as required by law.

We need to receive timely, accurate and complete information from a number of third parties in order to accurately and timely report our financial results. We rely on third parties to provide us with complete and accurate information regarding research developments and data, revenues, expenses and payments owed to or by us on a timely basis. We rely on the proper controls and procedures related to obtaining and reporting information from our CROs, licensees and collaborators related to research results and other data, when milestones are earned, if any, when royalties are earned, if any, as well as other types of potential revenues and expenses. If the information that we receive is not accurate, our consolidated financial statements may be materially incorrect and may require restatement. As a result, we may have difficulty in completing accurate and timely financial disclosures, which could have a material adverse effect on our business, financial condition and results of operations and the market price of our common stock.

Risks Related to Government Regulations and Environmental, Social, and Governance Issues

Potential future regulations limiting our ability to sell genetically engineered products could harm our business.

We, our current and future collaborators and licensees expect to develop biologic products using genetically engineered microorganisms (GMOs). Products derived from GMOs may in some instances be subject to bans or additional regulation by federal, state, local and foreign government agencies. These agencies may not allow us or our collaborators and licensees to produce and market products derived from GMOs in a timely manner or under technically or commercially feasible conditions.

Compliance with FDA, Environmental Protection Agency (EPA) and EU regulations could result in expenses, delays or other impediments to our product development programs or the commercialization of resulting products. The FDA currently applies the same regulatory standards to products made through genetic engineering as those applied to products developed through traditional methodologies. Regardless of GMO status, a product may be subject to lengthy FDA reviews and unfavorable FDA determinations due to safety concerns or changes in the FDA's regulatory policy. The EPA regulates biologically-derived enzyme-related chemical substances not within the FDA's jurisdiction. An unfavorable EPA ruling could delay commercialization or require modification of the production process or product in question, resulting in higher manufacturing costs, thereby making the product uneconomical. The EU and other countries also have regulations regarding the development, production and marketing of products from GMOs, which may be as or more restrictive than U.S. regulations.

Further, we, Danisco, and our current and future collaborators and licensees are subject to regulations in the other countries in which we operate outside of the U.S. and EU, which may have different rules and regulations depending on the jurisdiction. Different countries have different rules regarding which products qualify as GMOs. If any of these countries expand the definition of GMO and increase the regulatory burden on GMO products, our business could be harmed.

Other changes in regulatory requirements, laws and policies, or evolving interpretations of existing regulatory requirements, laws and policies, may result in increased compliance costs, delays, capital expenditures and other financial obligations that could adversely affect our business or financial results.

Public views on ethical and social issues may limit use of our technologies.

Our success will depend in part upon our ability, our current and future collaborators' or licensees' ability, to develop pharmaceutical and non-pharmaceutical products discovered, developed and manufactured through the C1-cell protein production platform, and our other technologies. Governmental authorities could, for social, ethical or other purposes, limit the use of genetic processes or prohibit the practice of using a modified C1 organism to produce biologic vaccines, drugs and other biologic products. Concerns about the C1-cell protein production platform and our other technologies, and particularly about the expression of genes from C1 for pharmaceutical purposes, could adversely affect their market acceptance.

The commercial success of our current and future collaborations and our licensees' potential products will depend in part on public acceptance of the use of genetically engineered products including enzymes, vaccines, drugs and other protein products produced in this manner. Claims that genetically engineered products are unsafe for consumption or pose a danger to the environment, animals or humans may influence public attitudes. Our and our licensees' genetically engineered products may not gain public acceptance. Negative public reaction to GMOs and products could result in increased government regulation of genetic research and resulting products, including stricter labeling laws or other regulations, and could cause a decrease in the demand for our products. If we and/or our collaborators are not able to overcome the ethical, legal, and social concerns relating to genetic engineering, some or all of our products and processes may not gain public acceptance, which could have a material adverse effect on our business, financial condition and results of operations.

Our results of operations may be adversely affected by environmental, health and safety laws, regulations and liabilities.

We and the CROs, collaborators and licensees are subject to various federal, state and local environmental laws and regulations relating to the discharge of materials into the air, water and ground, the generation, storage, handling, use, transportation and disposal of hazardous materials, and the health and safety of our employees. These laws, regulations and permits can often require expensive pollution control equipment or operational changes to limit actual or potential impacts to the environment. A violation of these laws and regulations or permit conditions could result in substantial fines, criminal sanctions, permit revocations and/or facility shutdowns.

In addition, new laws, new interpretations of existing laws, increased government enforcement of environmental laws, or other developments could require us or our CROs or other service providers to make additional significant expenditures. Present and future environmental laws and regulations and interpretations thereof, more vigorous enforcement of policies and discovery of currently unknown conditions may require substantial expenditures that could have a material adverse effect on our results of operations and financial position. Additionally, any such developments may have a negative impact on our contract manufacturers, which could harm our business.

Increasing scrutiny and changing expectations from customers, regulators, investors, and other stakeholders with respect to our environmental, social and governance practices may impose additional costs on us or expose us to new or additional risks.

Companies are facing increasing scrutiny from customers, regulators, investors, and other stakeholders related to their environmental, social and governance practices. Investor advocacy groups, investment funds and influential investors are also increasingly focused on these practices, especially as they relate to the environment, health and safety, supply chain management, diversity and human rights. Failure to adapt to or comply with regulatory requirements or investor or stakeholder expectations and standards could negatively impact our reputation and the price of our common stock.

In addition, our customers may adopt policies that include social and environmental requirements, or may seek to include such provisions in their contract terms and conditions. These social and environmental responsibility provisions and initiatives are subject to change and vary from jurisdiction to jurisdiction, and certain elements may be difficult and/or cost prohibitive for us to comply with given the inherent complexity and the global scope of our operations. In certain circumstances, in order to meet the requirements or standards of our customers, we may be obligated to modify our sourcing practices or make other operational choices which may require additional investments and increase our costs or result in inefficiencies.

Any of the factors mentioned above, or the perception that we or those with whom we conduct business have not responded appropriately to the growing concern for such issues, regardless of whether we are legally required to do so, may damage our reputation and have a material adverse effect on our business, financial condition, results of operations cash flows and/or the price of our common stock.

We have no experience submitting applications to the FDA or similar regulatory authorities in the past and could be subject to lengthy and/or unfavorable regulatory proceedings.

While we understand that many of our current and future collaborators or licensees may have a proven track record of experience submitting application to the FDA or other applicable regulatory authorities, we have no such experience in the past. Neither we nor any collaborator or licensee has yet submitted any application with the FDA or any other regulatory authority for any product candidate generated through the use of the C1-cell protein production platform as it relates to the development and manufacture of pharmaceutical products. The FDA may not have substantial experience with technology similar to ours, which could result in delays or regulatory action against us. We and our current and future collaborators and licensees may not be able to able to obtain regulatory approval for C1 expressed products, which would harm our business.

The C1-cell protein production platform has been tested for use in the manufacturing of an enzyme in the production of wine, beer and fruit juices, and has generated promising safety and toxicity data for that enzyme. The C1-cell protein production platform could produce vaccines, antibodies, or therapeutic products and enzymes that have safety, toxicity, pathogenicity, immunogenicity and other issues associated with them. The C1-cell protein production platform and our other technologies may be subject to lengthy regulatory reviews and unfavorable regulatory determinations if they raise safety questions which cannot be satisfactorily answered or if results from studies do not meet regulatory requirements. An unfavorable regulatory ruling could be difficult to resolve and could delay or possibly prevent a product from being commercialized, or even delay or prevent the use of the C1-cell protein production platform or our other technologies to produce future products, which would have a material adverse effect on our growth and prospects. Additionally, future products produced by us or our current and future collaborators or licensees using the C1-cell protein production platform or our other technologies may not be approved by the FDA or other regulatory agencies in the U.S. or worldwide. There is no assurance that safety, toxicity, pathogenicity, immunogenicity and other issues will not arise in current or future product development and manufacturing programs due to media, fermentation, inherent properties or genetic changes in the C1 and other strains and fermentation processes.

If these therapeutic protein products, antibodies or vaccines or other non-pharmaceutical products are not approved by regulators, we or our current and future customers or collaborators and licensees will not be able to commercialize them, and we may not receive research funding, upfront license fees, milestone and royalty payments, which are based upon the successful advancement of these products through the drug development and approval process. Even after investing significant time and expense, any regulatory approval may also impose limitations on the uses for which we can market a product, and any marketed product and its manufacturer are subject to continual review. Discovery of previously unknown problems with a product or manufacturer may result in new restrictions on the product, manufacturer and manufacturing facility, including withdrawal of the product from the market. In certain countries, regulatory agencies also set or approve prices, which may result in low or unprofitable margins and would have a material adverse effect on our business, financial condition and results of operations.

Risks Relating to Intellectual Property

Inability to protect our intellectual property could harm our ability to compete.

Our success will depend in part on our ability to obtain patents and on our and Danisco's (as part of the DuPont Transaction, patents were assigned to Danisco) and our current and future collaborators' and licensees' ability to maintain adequate protection of our and their intellectual property. If we, Danisco, or our current and future collaborators and licensees do not adequately protect our intellectual property, competitors may be able to practice our technologies and erode our competitive advantage. The laws of some foreign countries do not protect proprietary rights to the same extent as the laws of the United States, and many companies have encountered significant problems in protecting their proprietary rights in these foreign countries.

However, the patent positions of biotechnology companies, including our patent position, are generally uncertain and involve complex legal and factual questions. We will be able to protect our proprietary rights from unauthorized use by third parties only to the extent that our, and in certain instances the C1 patents assigned to Danisco, and our current and future collaborators and licensees proprietary technologies are covered by valid and enforceable patents or are effectively maintained as trade secrets. We intend, from time to time, to apply for patents covering both our technologies and our products, while at other times, we only maintain such knowledge as trade secrets without applying for patents, as we deem appropriate. However, existing and future patent applications may be challenged and are not guaranteed to result in the issuing of patents. Even if a patent is obtained, it may not be sufficiently broad to prevent others from practicing our technologies or from developing competing products. Others, including Danisco and our current and future collaborators and licensees, may independently develop similar or alternative technologies or design around our, Danisco's or our current and future collaborators' and licensees' patented technologies. In addition, Danisco, our current and future collaborators, licenses, or other third parties may challenge or invalidate our patents, or our patents may fail to provide us with any competitive advantages. If any third party is able to gain intellectual property protections for technology similar to our own, they may be successful in blocking us and our licensees from using the C1-cell protein production platform or our other technologies and/or commercializing products derived from them.

We cannot ensure that any of our pending patent applications will result in issued patents, or even if issued, predict the breadth of the claims upheld in our and other companies' patents. Given that the degree of future protection for our proprietary rights is uncertain, we cannot ensure that we were the first to invent the inventions covered by our pending patent applications, or that we were the first to file patent applications for these inventions or the patents we have obtained.

In addition, Dyadic will continue to review its existing and potential patent positions and rights. Based on our analysis if and when the commercial opportunities and patent enforceability are questionable, we may abandon certain patents in some countries. There is a risk that we will abandon potentially valuable patents.

Litigation or other proceedings or third-party claims of intellectual property infringement could require us to spend significant time and resources and could prevent us and our collaborators from commercializing our or their technologies and products or negatively impact our stock price.

Our commercial success depends in part on neither infringing patents and proprietary rights of third parties, nor breaching any licenses that we have entered into with regard to our technologies and products. Others have filed, and in the future are likely to file, patent applications covering genes or gene fragments, genetic elements, screening, gene expression and fermentation processes and other intellectual property that we may wish to utilize with the C1-cell protein production platform or our other technologies or products and systems that are similar to those developed with its use. If these patent applications result in issued patents and we wish to use the claimed technology, we may need to obtain a license from the appropriate third party.

Third parties do and may continue to assert that we and/or our current and future collaborators and licensees are employing their proprietary technology without authorization. In addition, third parties may obtain patents in the future and claim that use of our technologies infringes these patents. We could incur substantial costs and diversion of management and technical personnel in defending ourselves against any of these claims or enforcing our patents and other intellectual property rights. Parties making claims against us may be able to obtain injunctive or other equitable relief, which could effectively block our ability to further develop, commercialize and sell products, and could result in the award of substantial damages against us. If a claim of infringement against us is successful, we may be required to pay damages and obtain one or more licenses from third parties. In the event that we are unable to obtain these licenses at a reasonable cost, we and/or current and future collaborators and licensees could encounter delays in product commercialization while we attempt to develop alternative methods or products. Defense of any lawsuit or failure to obtain any of these licenses could prevent us from commercializing available products.

In addition, unauthorized parties may attempt to steal, copy or otherwise obtain and use our C1 microbial strains, genetic elements, development and manufacturing processes, other technology or products. Monitoring unauthorized use of our intellectual property is difficult, and we cannot be certain that the steps we have taken will prevent unauthorized use of our technologies, particularly in certain foreign countries where the local laws may not protect our proprietary rights as fully as in the United States. Moreover, third parties could practice our inventions in territories where we do not have patent protection. Such third parties may then try to import into the United States or other territories products, or information leading to potentially competing products, made using our inventions in countries where we do not have patent protection for those inventions. If competitors are able to use our technologies, our ability and our current and future collaborators' and licensees' ability to compete effectively could be harmed. Moreover, others may independently develop and obtain patents for technologies that are similar to or superior to our technologies. If that happens, we may need to license these technologies, and we may not be able to obtain licenses on reasonable terms, if at all, which could harm our business, financial condition and results of operations.

Confidentiality agreements with employees and others may not adequately prevent disclosures of trade secrets and other proprietary information.

We rely in part on trade secret protection to protect our confidential and proprietary information and processes. However, trade secrets are difficult to protect. We have taken measures to protect our trade secrets and proprietary information, but these measures may not be effective. We require employees and consultants to execute confidentiality agreements upon the commencement of an employment or consulting arrangement with us. These agreements generally require that all confidential information developed by the individual or made known to the individual by us during the course of the individual's relationship with us be kept confidential and not disclosed to third parties. These agreements also generally provide that inventions conceived by the individual in the course of rendering services to us shall be our exclusive property. Nevertheless, our proprietary information may be disclosed, third parties could reverse engineer our biocatalysts and others may independently develop substantially equivalent proprietary information and techniques or otherwise gain access to our trade secrets. Costly and time-consuming litigation could be necessary to enforce and determine the scope of our proprietary rights, and failure to obtain or maintain trade secret protection could adversely affect our competitive business position.

Risks Related to Our Common Stock

The price of our shares of common stock is likely to be volatile, and you could lose all or part of your investment.

The trading price of our common stock has been, and is likely to continue to be, volatile. Biotechnology company stocks generally tend to experience extreme price fluctuations. The valuations of many biotechnology companies without consistent product sales and earnings are extraordinarily high based on conventional valuation standards such as price-to-earnings and price-to-sales ratios. These trading prices and valuations may not be sustained. Factors that may result in fluctuations in our stock price include, but are not limited to, the following:

- Changes in the public's perception of the prospects of biotechnology companies;
- Sales of our common stock in the public market by such stockholders or other significant stockholders, executive officers, or directors;
- Announcements of new technological innovations, patents or new products or processes by us, Danisco or our current or future collaborators, licensees and competitors;
- Announcements by us, Danisco or our collaborators and licensees relating to our relationships or either of our relationships with other third parties;
- Coverage of, or changes in financial estimates by us or securities and industry analysts;
- Conditions or trends in the biotechnology industry;
- Changes in investor interest in the areas in which we and/or our collaborators and licensees are applying our technologies, such as COVID-19;
- Changes in the state of the COVID-19 pandemic or other diseases and/or types of vaccines and/or treatments related thereto;
- Changes in the market valuations of other biotechnology companies;
- Limitations or expanded uses in the areas within the biopharmaceutical or other industries into which we can apply our technologies and products;
- Actual or anticipated changes in our growth rate relative to our competitors;
- Developments in domestic and international governmental policy or regulations;
- Announcements by us, Danisco, our current and future collaborators and licenses, or our competitors of significant acquisitions, divestures, strategic partnerships, license agreements, joint ventures or capital commitments;
- The position of our cash, cash equivalents and marketable securities;
- Any changes in our debt position;
- Developments in patent or other proprietary rights held by us, Danisco or by others;
- Negative effects related to the stock or business performance of Danisco, our current and future collaborators and licensees, or the abandonment of projects using our technology by our collaborators and/or licensees;
- Scientific risks inherent to emerging technologies such as the C1-cell protein production platform or our other technologies;
- Set-backs, and/or failures, and or delays in our or our current and future collaborators' and licensees' R&D and commercialization programs;
- Delays or failure to receive regulatory approvals by us, Danisco and/or our current and future collaborators and licensees;
- Loss or expiration of our or Danisco's intellectual property rights;
- Theft, misappropriation or expiration of owned or licensed proprietary and intellectual property, genetic and biological material owned by us and/or Danisco US, Inc., and VTT Technical Research Centre of Finland Ltd;
- Lawsuits initiated by or against us, Danisco, or our current and future collaborators and licensees;
- Period-to-period fluctuations in our operating results;
- Future royalties from product sales, if any, by Danisco, our current or future strategic partners, collaborators or licensees;
- Future royalties may be owed to Danisco by us, our collaborators, licenses, or sub-licensees under certain circumstances related to our Danisco Pharma License;
- Short positions taken in our common stock;
- Sales of our common stock or other securities in the open market;
- Stock buy-back programs;
- Stock splits; and
- Decisions made by the board related to potential registration of Dyadic's stock under the Securities Act of 1933 (as amended (the "Securities Act"), and/or up listing to another stock exchange.

If we were to become party to a securities class action suit, we could incur substantial legal fees and our management's attention and resources could be diverted from operating our business to responding to litigation.

Our quarterly and annual operating results may be volatile.

Our quarterly and annual operating results have fluctuated in the past and are likely to do so in the future. These fluctuations could cause our stock price to vary significantly or decline. Some of the factors that could impact our operating results include:

- Expiration of or cancellations of our research contracts with current and future collaborators and/or licensees, which may not be renewed or replaced;
- Setbacks or failures in our and our current and future collaborators and licensees research, development and commercialization efforts;
- Setbacks, or delays in our research and development efforts to develop and produce biologics;
- Setbacks, or delays in our research and development efforts to re-engineer the C1-cell protein production platform or our other technologies for their applications and use in developing and producing biologics;
- The speed, and success rate of our discovery and research and development efforts leading to potential licenses, or other forms of collaborations, access fees, milestones and royalties;
- The timing and willingness of current and future collaborators and licensees to utilize C1 to develop and commercialize their products which would result in potential upfront fees, milestones and royalties;
- General and industry specific economic conditions, which may affect our current and future collaborators' and licensees' R&D expenditures;
- The adoption and acceptance of the C1-cell protein production platform and our other technologies by biopharmaceutical and non-pharmaceutical companies and regulatory agencies;
- The addition or loss of one or more of the collaborative partners, grants, research funding, or licensees we are working with to further develop and commercialize our technologies and products in the pharmaceutical industry;
- Our ability to file, maintain and defend our intellectual property and to protect our proprietary information and trade secrets;
- Our ability to develop technology, products and processes that do not infringe on the intellectual property of third parties;
- The improvement and advances made by our competitors to CHO, *E.coli*, yeast, inset cells, plant and other expression systems;
- The introduction by our competitors of new discovery and expression technologies competitive with the C1-cell protein production platform;
- Our ability to enter into new research projects, grants, licenses or other forms of collaborations and generate revenue from such parties;
- Scientific risk associated with emerging technologies such as the C1-cell protein production platform;
- Failure to bring on the necessary research, CMO, CDMO and manufacturing capacity if required;
- Uncertainty regarding the timing of research funding, grants or upfront license fees for new C1-cell protein production platform, our other technologies, collaborations, license agreements or expanded license agreements; and
- Delays or failure to receive upfront fees, milestones and royalties and other payments.

Due to the possibility of fluctuations in our revenues and expenses, we believe that quarter-to-quarter comparisons of our operating results are not necessarily a good indication of our future performance. Our operating results in some quarters, or even in some years, may not meet the expectations of stock market analysts and investors, potentially causing our stock price to decline.

We do not expect to pay cash dividends in the future.

We have never paid cash dividends on our stock and do not anticipate paying any dividends for the foreseeable future. The payment of dividends on our shares, if ever, will depend on our earnings, financial condition and other business and economic factors deemed relevant for consideration by our board of directors. If we do not pay dividends, our stock may be less valuable because a return on investment will only occur if and to the extent that our stock price appreciates.

Our anti-takeover defense provisions may deter potential acquirers and depress our stock price.

Certain provisions of our certificate of incorporation, bylaws and Delaware law, as well as certain agreements we have with our executives, could make it substantially more difficult for a third party to acquire control of us. These provisions include the following:

- We may issue preferred stock with rights senior to those of our common stock;
- We have a classified board of directors;
- Action by written consent by stockholders is not permitted;
- Our board of directors has the exclusive right to fill vacancies and set the number of directors;
- Cumulative voting by our stockholders is not allowed; and
- We require advance notice for nomination of directors by our stockholders and for stockholder proposals.

These provisions may discourage certain types of transactions involving an actual or potential change in control. These provisions may also limit our stockholders' ability to approve transactions that they may deem to be in their best interests and discourage transactions in which our stockholders might otherwise receive a premium for their shares over the current market price.

Concentration of ownership among our existing officers, directors and principal stockholders may prevent other stockholders from influencing significant corporate decisions and depress our stock price.

Our executive officers, directors and principal stockholders (5% stockholders) together control approximately 30.6% of our 28,229,157 shares of outstanding common stock as of December 31, 2021.

Our Founder and Chief Executive Officer Mark Emalfarb, through the Mark A. Emalfarb Trust U/A/D October 1, 1987, as amended (the "MAE Trust") of which he is the trustee and beneficiary, owned approximately 15.6% of our outstanding common stock as of December 31, 2021. Further, the Francisco Trust U/A/D February 28, 1996 (the "Francisco Trust"), whose beneficiaries are the descendants and spouse of Mr. Emalfarb, owned approximately 13.6% of our outstanding common stock as of December 31, 2021. We have historically been partially controlled, managed and partially funded by Mr. Emalfarb, and affiliates of Mr. Emalfarb. Collectively, Mr. Emalfarb and stockholders affiliated with Mr. Emalfarb controlled approximately 28.2% of our outstanding common stock as of December 31, 2021.

Mr. Emalfarb may be able to control or significantly influence all matters requiring approval by our shareholders, including the election of directors and the approval of mergers or other business combination transactions. The interests of Mr. Emalfarb may not always coincide with the interests of other shareholders, and he may take actions that advance his personal interests and are contrary to the desires of our other shareholders.

If our existing officers, directors and principal stockholders act together, they will be able to exert a significant degree of influence over our management and affairs and over matters requiring stockholder approval, including the election of directors and approval of significant corporate transactions. In addition, this concentration of ownership may delay or prevent a change in control and might affect the market price of our shares, even when a change may be in the best interests of all stockholders. Certain of our principal stockholders may elect to increase their holdings of our common stock, which may have the impact of delaying or preventing a change of control. Moreover, the interests of this concentration of ownership may not always coincide with our interests or the interests of other stockholders, and, accordingly, they could cause us to enter into transactions or agreements, which we would not otherwise consider.

Future issuances of shares of our common stock may negatively affect our stock price.

The sale of additional shares of our common stock, or the perception that such sales could occur, could harm the prevailing market price of shares of our common stock. These sales, or the possibility that these sales may occur, also might make it more difficult for us to sell equity securities in the future at a time and at a price that we deem appropriate.

As of December 31, 2021, there were 28,229,157 shares of our common stock outstanding. Approximately 30.6% of these outstanding common shares are beneficially owned or controlled by our executive officers, directors and principal stockholders.

Our common stock has a relatively small public float. As a result, sales of substantial amounts of shares of our common stock, or even the potential for such sales, may materially and adversely affect prevailing market prices for our common stock. In addition, any adverse effect on the market price of our common stock could make it difficult for us to raise additional capital through sales of equity securities.

The Company is exposed to credit risk and fluctuations in the values of its investment portfolio.

The Company's investments can be negatively affected by liquidity, credit deterioration, financial results, market and economic conditions, political risk, sovereign risk, interest rate fluctuations or other factors. As a result, the value and liquidity of the Company's cash, cash equivalents, and marketable and non-marketable securities may fluctuate substantially, which could result in significant losses and could have a material adverse impact on the Company's financial condition and operating results.

We are a smaller reporting company, and the reduced disclosure requirements applicable to smaller reporting companies may make our common stock less attractive to investors.

We are a smaller reporting company and are therefore entitled to rely on certain reduced disclosure requirements, such as an exemption from providing selected financial data and executive compensation information. We are also exempt from the requirement to obtain an external audit on the effectiveness of internal control over financial reporting provided in Section 404(b) of the Sarbanes-Oxley Act. These exemptions and reduced disclosures in our filings with the Securities and Exchange Commission due to our status as a smaller reporting company mean our auditors do not review our internal control over financial reporting, and may make it harder for investors to analyze our results of operations and financial prospects. We cannot predict if investors will find our common stock less attractive because we may rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock, and our stock prices may be more volatile.

General Risk Factors

We may need substantial additional capital in the future to fund our business.

Our future capital requirements may be substantial, particularly as we continue to further develop, engineer and optimize the C1-cell protein production platform and our other proprietary technologies, products and processes for licensing for research and development, and commercialization of potential animal and human pharmaceutical products.

We currently have very little leverage, and if our capital resources are insufficient to meet our capital requirements, we will have to raise additional funds to continue the development of our technologies and complete the development and commercialization of products, if any, resulting from our technologies. If the acquisition of additional funds is not possible or if we engage in future equity financings, dilution to our existing stockholders may result. If we raise capital through debt financing, we may be subject to restrictive covenants that limit our ability to conduct our business. We may not be able to raise funds on terms that are favorable to us, if at all. If we fail to raise sufficient funds and incur losses, our ability to fund our operations, take advantage of strategic opportunities, develop products or technologies, or otherwise respond to competitive pressures could be significantly limited. If this happens, we may be forced to delay or terminate research or development programs or the commercialization of products resulting from our technologies, curtail or cease operations or obtain funds through collaborative and licensing arrangements that may require us to relinquish commercial rights, sell certain assets of the company which will limit future opportunities, or grant licenses on terms that are not favorable to us. Without sufficient funding or revenue, we may have to curtail, cease, or dispose of one or more of our operations, which would have a material adverse effect on our business, financial condition, and future prospects.

Changes in global economic and financial markets may have a negative effect on our business.

Our business is subject to a variety of market forces including, but not limited to, domestic and international economic, political and social conditions. Many of these forces are beyond our control. Any change in market conditions that negatively impacts our operations or the demand of our current or prospective customers could adversely affect our business operations.

Changes in the global financial, pharmaceutical and biotech markets may make it difficult to accurately forecast operating results. These changes have had, and may continue to have, a negative effect on our business, results of operations, financial condition and liquidity. In the event of a downturn in global economic activity, current or potential business partners may go out of business, may be unable to fund purchases or determine to reduce purchases, all of which could lead to reduced demand for our products and increased payment delays or defaults. We are also limited in our ability to reduce costs to offset the results of a prolonged or severe economic downturn given certain fixed costs associated with our operations and difficulties if we over strained our resources. The timing and nature of a sustained recovery in the credit and financial markets remains uncertain, and there can be no assurance that market conditions will significantly improve in the near future or that our results will not continue to be materially and adversely affected.

We face risks related to health epidemics, pandemics and other widespread outbreaks of contagious disease, pandemics, epidemics or other biological threats, such as the ongoing COVID-19 pandemic, that could significantly disrupt our operations and have a material adverse effect on our business, employees, directors, consultants, collaborators and other third parties, including business development activities and research and development projects conducted by third party contract research organizations parties.

Significant outbreaks of contagious diseases, and other adverse public health developments, could have a material impact on our business operations, financial condition, and operating results. The ongoing COVID-19 pandemic has significantly impacted the operation of business in the United States and Europe, where several of our key executive management members and our third-party contract research organizations are located. The continuation of the COVID-19 pandemic and various governmental responses in the United States and Europe has adversely affected and may continue to adversely affect our business operations, including our ability to carry on business development activities, restrictions in business-related travel, delays or disruptions in our on-going research projects, and unavailability of the employees of the Company or third-party contract research organizations with whom we conduct business, due to illness or quarantines, among others.

In addition, we rely on third parties in the United States and Europe to conduct our research and development projects and to provide other services, and COVID-19 has affected and may continue to affect service providers of such third-party contract research organizations and therefore negatively affect the operations of our on-going research projects, which could materially and negatively affect our business, financial condition, and results of operations.

The COVID-19 pandemic has adversely affected and may continue to adversely affect the economies and financial markets worldwide, resulting in an economic downturn that could impact our business, financial condition and results of operations. As a result, our ability to fund through public or private equity offerings, debt financings, and through other means at acceptable terms, if at all, may be disrupted, in the event our financing needs for the foreseeable future are not able to be met by our existing balances of cash, cash equivalents and investments. In addition, the COVID-19 pandemic has posed and may continue to pose significant challenges for our supply chains, particularly as a result of mandatory shutdowns in locations where our products are manufactured or held for distribution. The extent to which COVID-19 could impact our business and research and development activities will depend on future developments, which are highly uncertain and cannot be predicted with confidence, and will depend on many factors, including the duration of the outbreak, the effect of travel restrictions and social distancing efforts in the United States and other countries, the scope and length of business closures or business disruptions, and the actions taken by governments to contain and treat the disease. As such, we cannot presently predict the scope and extent of any potential business shutdowns or disruptions.

The Company is currently working on several COVID-19 related vaccine and antibody opportunities. However, there is no assurance that any of these opportunities will materialize or that the C1-cell protein production platform or any product expressed from C1 or any of the various other steps in a vaccine or drug development process will perform, provide benefits, obtain governmental safety and regulatory approvals, be registered or gain market acceptance. In addition, our C1-cell protein production platform has yet to be used to produce a vaccine, antibody or other biologic product that has entered the clinical trial phase, and we are competing with more experienced companies for grants or funding of this type. As a result, there is no assurance that we will receive these grants or funding resulting from these proposals.

Our sales and operations are subject to the risks of doing business internationally.

Our sales and operations are subject to the risks of doing business internationally, as we have customers and partners located outside of the United States. Conducting business internationally exposes us to a variety of risks, including:

- changes in or interpretations of foreign regulations that may adversely affect our ability to sell our products, repatriate profits to the United States or operate our foreign-located facilities;

- the imposition of tariffs;
- the imposition of limitations on, or increase of, withholding and other taxes on remittances and other payments by foreign subsidiaries or joint ventures;
- uncertainties relating to foreign laws, regulations and legal proceedings including tax, import/export, anti-corruption and exchange control laws;
- the availability of government subsidies or other incentives that benefit competitors in their local markets that are not available to us;
- increased demands on our limited resources created by our operations may constrain the capabilities of our administrative and operational resources and restrict our ability to attract, train, manage and retain qualified management, technicians, scientists and other personnel;
- economic or political instability in foreign countries;
- difficulties associated with staffing and managing foreign operations; and
- the need to comply with a variety of United States and foreign laws applicable to the conduct of international business, including import and export control laws and anti-corruption laws.

If we lose key personnel, including key management or board members, or are unable to attract and retain additional personnel, it could delay our technology and product development programs and harm our R&D efforts, and we may be unable to pursue research funding, licenses and other forms of collaborations or develop our own products.

Our planned activities will require retention, and ongoing recruiting of additional expertise in specific areas applicable to our industries, technologies and products being developed. These activities will not only require the development of additional expertise by existing management personnel, but also the addition of new research and scientific, regulatory, licensing, sales, marketing, management, accounting and finance and other personnel. The inability to acquire or develop this expertise or the loss of principal members of our management, board of directors, consultants, accounting and finance, sales, and scientific staff could impair the growth, if any, of our business. Competition for experienced personnel from numerous companies, academic institutions and other research facilities may limit our ability to attract and retain qualified management, directors, consultants, and scientific personnel on acceptable terms. Failure to attract and retain qualified personnel would inhibit our ability to maintain and pursue collaborations and develop our products and core technologies.

Personnel changes may disrupt our operations. Hiring and training new personnel will entail costs and may divert our resources and attention from revenue-generating efforts. In addition, we periodically engage consultants to assist us in our business and operations. These consultants operate as independent contractors, and we therefore do not have as much control over their activities as we do over the activities of our employees. Our directors and consultants may be affiliated with or employed by other parties, and some may have consulting or other advisory arrangements with other entities that may conflict or compete with their obligations to us.

We may be sued for product liability.

We or our current and future collaborators and licenses may be held liable if any product we or they develop, or any product which is made with the use or incorporation of, any of our technologies, causes injury or is found otherwise unsuitable or unsafe during product testing, manufacturing, marketing or sale. These claims could be brought by various parties, including other companies who purchase products from our current and future collaborators and licenses or by end users of the products.

While we maintain product liability insurance, it may not fully cover all of our potential liabilities and our liability could in some cases exceed our total assets, which would have a material adverse effect on our business, results of operations, financial condition and cash flows, or cause us to go out of business. Further, insurance coverage is expensive and may be difficult to obtain and may not be available to us or to our collaborators and licensees in the future on acceptable terms, or at all. Inability to obtain sufficient insurance coverage at an acceptable cost to protect against potential product liability claims could prevent or inhibit the commercialization of products developed by us, or our collaborators and licensees.

Foreign currency fluctuations could adversely affect our results.

In the conduct of our business, in certain instances, we are required to receive payments or pay our obligations in currencies other than U.S. dollars. Especially since a large portion of our research and development is done in the EU and the CROs and certain consultants request payments in Euros. As a result, we are exposed to changes in currency exchange rates with respect to our business transactions denominated in non-US dollars. Fluctuations in currency exchange rates have in the past and may in the future negatively affect our revenue, expenses and our financial position and results of operations as expressed in U.S. dollars.

Our ability to use our net operating loss carryforwards ("NOLs") to offset future taxable income may be subject to certain limitations.

In general, under Section 382 of the Internal Revenue Code, a corporation that undergoes an "ownership change" is subject to limitations on its ability to utilize its NOLs, to offset future taxable income. If the Internal Revenue Service challenges our analysis that our existing NOLs are not subject to limitations arising from previous ownership changes, our ability to utilize NOLs could be limited by Section 382 of the Internal Revenue Code. Future changes in our stock ownership, some of which are outside of our control, could result in an ownership change under Section 382 of the Internal Revenue Code. Furthermore, our ability to utilize NOLs of companies that we may acquire in the future may be subject to limitations.

We may make acquisitions, investments and strategic alliances that may use significant resources, result in disruptions to our business or distractions of our management, may not proceed as planned, and could expose us to unforeseen liabilities.

We may seek to expand our business through the acquisition of, investment in and strategic alliances with companies, technologies, products, and services. If we are able to identify suitable acquisition, investment or strategic alliance targets, we may be unable to successfully negotiate their acquisition at a price or on terms and conditions acceptable to us.

We cannot assure you that, following an acquisition, investment or strategic alliance, we will achieve expected research and development results, anticipated synergies, revenues, specific net income or loss levels that justify such transaction or that the transaction will result in increased earnings, or reduced losses, for the combined company in any future period. Moreover, we may need to raise additional funds through public or private debt or equity financing to acquire any businesses or to provide funding for such business, which would result in dilution for stockholders or the incurrence of indebtedness and may not be available on terms which would otherwise be acceptable to us. We may not be able to oversee such investment(s) nor operate acquired businesses profitably or otherwise implement our growth strategy successfully.

We rely significantly on information technology and any failure, inadequacy, interruption or security lapse of that technology, including any cybersecurity incidents, could harm our ability to operate our business effectively.

Despite the implementation of security measures, our internal computer systems and those of third parties with which we contract are vulnerable to damage from cyber-attacks, computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. System failures, accidents or security breaches could cause interruptions in our operations and could result in a material disruption of our research activities and business operations, in addition to possibly requiring substantial expenditures of resources to remedy. To the extent that any disruption or security breach were to result in a loss of, or damage to, our data or applications, or inappropriate disclosure of confidential or proprietary information, we could incur liability and delays in our research efforts and financial reporting compliance, as well as significant increase in costs to recover or reproduce the data.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Leases

Jupiter, Florida Headquarters

The Company's corporate headquarters are located in Jupiter, Florida. The Company occupies approximately 2,000 square feet with a monthly rental rate and common area maintenance charges of approximately $4,400. The lease will expire on September 1, 2022. The Company will reconsider the square footage of the leased space to align with the staffing requirements of the future operations of the Company.

The Netherlands Office

The Company maintains a small satellite office in Wageningen, The Netherlands. The Company occupies a flexible office space for an annual rental rate of approximately $4,000. The lease expires on January 31, 2023, and thereafter, the Company will reconsider the leased space to align with the future operations of the Company.

We believe that our current and anticipated facilities are adequate to meet our needs for the immediate future, and that, should it be needed, suitable additional space is available to accommodate any expansion of our operations, but such space may not be available in the same building if and when such space is needed.

Item 3. Legal Proceedings

We are not currently involved in any litigation that we believe could have a materially adverse effect on our financial condition or results of operations. There is no action, suit, proceeding, inquiry or investigation before or by any court, public board, government agency, self-regulatory organization or body pending or, to the knowledge of the executive officers of our Company or any of our subsidiaries, threatened against or affecting our Company, our common stock, any of our subsidiaries or of our Company's or our Company's subsidiaries' officers or directors in their capacities as such, in which an adverse decision could have a material adverse effect.

However, from time to time, we may become involved in various lawsuits and legal proceedings which arise in the ordinary course of business. Litigation is subject to inherent uncertainties, and an adverse result in these or other matters may arise from time to time that may harm our business.

Item 4. Mine Safety Disclosures

Not applicable for our operations.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchase of Equity Securities

Principal Market or Markets

As of December 31, 2021, Dyadic had two classes of capital stock authorized, common stock and preferred stock. Effective April 17, 2019, our common stock began trading on the NASDAQ Stock Market LLC's NASDAQ Capital Market, under the symbol "DYAI". There were no shares of preferred stock outstanding for the reported period. The number of record holders of our common stock as of December 31, 2021 was 53. There have been no stock dividends within the last three years. Any future determination to pay dividends will be at the discretion of our Board of Directors (the "Board").

Securities Authorized for Issuance Under Equity Compensation Plans

See Part III, Item 12.

Treasury Stock

As of December 31, 2021 and 2020, there were 12,253,502 shares of common stock held in treasury, at a cost of approximately $18.9 million, representing the purchase price on the date the shares were surrendered to the Company.

Issuer Purchases of Equity Securities

Stock Repurchase Programs

There were no repurchases of any class of the Company's capital stock in 2021.

Open Market Sale Agreement℠

On August 13, 2020, we entered into an Open Market Sale Agreement℠ with Jefferies LLC, ("Jefferies"), with respect to an at the market offering program under which we may offer and sell, from time to time at our sole discretion, shares of our common stock, par value $0.001 per share, having an aggregate offering price of up to $50.0 million through Jefferies as our sales agent or principal.

We have not and are not obligated to sell any shares under the sale agreement. Subject to the terms and conditions of the sale agreement, Jefferies will use commercially reasonable efforts, consistent with its normal trading and sales practices and applicable laws and regulations, to sell shares of our common stock from time to time based upon our instructions, including any price, time or size limits or other customary parameters or conditions we specify, subject to certain limitations. Under the sale agreement, Jefferies may sell shares of our common stock by any method permitted by law deemed to be an "at the market offering" as defined in Rule 415(a)(4) under the Securities Act of 1933, as amended.

We will pay Jefferies a commission equal to 3.0% of the gross proceeds from each sale of shares of our common stock sold through Jefferies under the sale agreement and will provide Jefferies with customary indemnification and contribution rights. In addition, we agreed to reimburse certain legal expenses and fees by Jefferies in connection with the offering up to a maximum of $50,000, in addition to certain ongoing disbursements of Jefferies' counsel, if required. The sale agreement will terminate upon the sale of all $50.0 million of shares under the sale agreement, unless earlier terminated by either party as permitted therein.

The issuance and sale, if any, of shares of our common stock by us under the sale agreement will be made pursuant to a registration statement on Form S-3 filed with the SEC on August 13, 2020 and declared effective by the SEC on August 25, 2020 and the accompanying Prospectus, as supplemented by a Prospectus Supplement. As of the date of this filing, there have been no sales made under the Open Market Sale Agreement℠.

Item 6. [Reserved]

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis of financial condition and results of operations should be read in conjunction with the financial statements and the notes to those statements appearing in this Annual Report. Some of the information contained in this discussion and analysis or set forth elsewhere in this Annual Report, including information with respect to our plans and strategy for our business, includes forward-looking statements that involve risks, assumptions and uncertainties. Important factors that could cause actual results to differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis include, but not limited to those set forth in "Item 1A. Risk Factors" in this Annual Report. All forward-looking statements included in this Annual Report are based on information available to us as of the time we file this Annual Report and, except as required by law, we undertake no obligation to update publicly or revise any forward-looking statements.

Overview

Description of Business

Dyadic International, Inc. ("Dyadic", "we", "us", "our", or the "Company") is a global biotechnology platform company based in Jupiter, Florida with operations in the United States and a satellite office in the Netherlands, and it utilizes a number of third-party consultants and research organizations to carry out the Company's activities. Over the past two plus decades, the Company has developed a gene expression platform for producing commercial quantities of industrial enzymes and other proteins, and has previously licensed this technology to third parties, such as Abengoa Bioenergy, BASF, Codexis and others, for use in industrial (non-pharmaceutical) applications. This technology is based on the *Thermothelomyces heterothallica* (formerly known as *Myceliophthora thermophila*) fungus, which the Company named C1. The C1-cell protein production platform is a robust and versatile thermophilic filamentous fungal expression system for the development and production of biologic products including enzymes and other proteins.

On December 31, 2015, the Company sold its industrial technology business to Danisco USA ("Danisco"), the industrial biosciences business of DuPont (NYSE: DD) (the "DuPont Transaction"). As part of the DuPont Transaction, Dyadic retained co-exclusive rights to the C1-cell protein production platform for use in all human and animal pharmaceutical applications, and currently the Company has the exclusive ability to enter into sub-license agreements (subject to the terms of the license and to certain exceptions) for use in all human and animal pharmaceutical applications. Danisco retained certain rights to utilize the C1-cell protein production platform in pharmaceutical applications, including the development and production of pharmaceutical products, for which it will be required to make royalty payments to Dyadic upon commercialization. In certain circumstances, Dyadic may owe a royalty to either Danisco or certain licensors of Danisco, depending upon whether Dyadic elects to utilize certain patents either owned by Danisco or licensed in by Danisco.

After the DuPont Transaction, the Company has primarily been focused on the animal and human biopharmaceutical industries, specifically in further improving and applying the proprietary C1-cell protein production platform into a safe and efficient protein production platform to help speed up the development, lower production costs and improve the performance of biologic vaccines and drugs and other biological products at flexible commercial scales. Some examples of human and animal vaccines and drugs which have the potential to be produced from C1-cells are protein antigens, virus-like particles ("VLPs"), monoclonal antibodies ("mAbs"), Bi/Tri-specific antibodies, Fab antibody fragments, Fc-fusion proteins, as well as other therapeutic enzymes and proteins. The Company is involved in multiple funded research collaborations with animal and human pharmaceutical companies which are designed to leverage its C1-cell protein production platform to develop innovative vaccines and drugs, biosimilars and/or biobetters. Additionally, the Company has begun to develop other technologies that have potential applications in non-pharmaceutical markets.

Impact of COVID-19

The outbreak of COVID-19 has led to adverse impacts on the U.S. and global economies and created uncertainty regarding the potential impact to the Company's employees, operations, and research projects.

The extent to which the COVID-19 pandemic will directly or indirectly impact our business will depend on future developments that are highly uncertain, including as a result of new information that may emerge concerning the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and SARS-CoV-2 variants and the actions taken and the level of success to contain or treat the SARS-CoV-2 virus and its variants, the economic impact on local, regional, national and international business partners and markets, delays or disruptions in our on-going research projects, and unavailability of the employees of the Company or third-party contract research organizations with whom we conduct business, due to illness or quarantines, all of which are highly uncertain and cannot be predicted at this time. Management is actively monitoring this situation and the possible effects on its financial condition, liquidity, operations, vendors, industry, and workforce. Even after the COVID-19 pandemic has subsided, the Company may continue to experience adverse impacts to its business because of economic recession or depression that has occurred or may occur in the future. Given the daily evolution of the COVID-19 outbreak and the ongoing response to curb its spread (including government travel and meeting restrictions) currently we are not able to accurately estimate the effects of the COVID-19 outbreak to our results of operations, financial condition, or liquidity.

Critical Accounting Policies, Estimates, and Judgments

The preparation of these consolidated financial statements in accordance with U.S. generally accepted accounting principles ("GAAP") requires management to make estimates and judgments that affect the reported amount of assets and liabilities and related disclosure of contingent assets and liabilities at the date of our consolidated financial statements and the reported amounts of revenues and expenses during the applicable period. Actual results may differ from these estimates under different assumptions or conditions. Such differences could be material to the consolidated financial statements.

We define critical accounting policies as those that are reflective of significant judgments and uncertainties and which may potentially result in materially different results under different assumptions and conditions. In applying these critical accounting policies, our management uses its judgment to determine the appropriate assumptions to be used in making certain estimates. These estimates are subject to an inherent degree of uncertainty. Our critical accounting policies include the following:

Revenue Recognition

The Company has no products approved for sale at this point. All of our revenue to date has been research revenue from third-party collaborations and government grants, as well as revenue from sublicensing agreements and collaborative arrangements, which may include upfront payments, options to obtain a license, payment for research and development services, milestone payments and royalties, in the form of cash or non-cash considerations (e.g., minority equity interest).

Revenue related to research collaborations and agreements: The Company typically performs research and development services as specified in each respective agreement on a best efforts basis, and recognizes revenue from research funding under collaboration agreements in accordance with the 5-step process outlined in ASC Topic 606 ("Topic 606"): (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the entity satisfies a performance obligation. We recognize revenue when we satisfy a performance obligation by transferring control of the service to a customer in an amount that reflects the consideration that we expect to receive. Depending on how the performance obligation under our license and collaboration agreements is satisfied, we elected to recognize the revenue either at a point in time or over time by using the input method under Topic 606 to measure the progress toward complete satisfaction of a performance obligation.

Under the input method, revenue will be recognized based on the entity's efforts or inputs to the satisfaction of a performance obligation (e.g., resources consumed, labor hours expended, costs incurred, or time elapsed) relative to the total expected inputs to the satisfaction of that performance obligation. The Company believes that the cost-based input method is the best measure of progress to reflect how the Company transfers its performance obligation to a customer. In applying the cost-based input method of revenue recognition, the Company uses actual costs incurred relative to budgeted costs to fulfill the performance obligation. These costs consist primarily of full-time equivalent effort and third-party contract costs. Revenue will be recognized based on actual costs incurred as a percentage of total budgeted costs as the Company completes its performance obligations.

A cost-based input method of revenue recognition requires management to make estimates of costs to complete the Company's performance obligations. In making such estimates, significant judgment is required to evaluate assumptions related to cost estimates. The cumulative effect of revisions to estimated costs to complete the Company's performance obligations will be recorded in the period in which changes are identified and amounts can be reasonably estimated. A significant change in these assumptions and estimates could have a material impact on the timing and amount of revenue recognized in future periods.

Revenue related to grants: The Company may receive grants from governments, agencies, and other private and not-for-profit organizations. These grants are intended to be used to partially or fully fund the Company's research collaborations, including opportunities arising in connection with COVID-19 that the Company is pursuing with certain collaborators. However, most, if not all, of such potential grant revenues, if received, is expected to be earmarked for third parties to advance the research required, including preclinical and clinical trials for SARS-CoV-2 vaccines and/or antibodies candidates.

Revenue related to sublicensing agreements: If the sublicense to the Company's intellectual property is determined to be distinct from the other performance obligations identified in the arrangement, the Company recognizes revenue allocated to the license when technology is transferred to the customer and the customer is able to use and benefit from the license.

Customer options: If the sublicensing agreement includes customer options to purchase additional goods or services, the Company will evaluate if such options are considered material rights to be deemed as separate performance obligations at the inception of each arrangement.

Milestone payments: At the inception of each arrangement that includes development, commercialization, and regulatory milestone payments, the Company evaluates whether the achievement of the milestones is considered probable and estimates the amount to be included in the transaction price. If the milestone payment is in exchange for a sublicense and is based on the sublicensee's subsequent sale of product, the Company recognizes milestone payment by applying the accounting guidance for royalties. To date, the Company has not recognized any milestone payment revenue resulting from any of its sublicensing arrangements.

Royalties: With respect to licenses deemed to be the predominant item to which the sales-based royalties relate, including milestone payments based on the level of sales, the Company recognizes revenue at the later of (i) when the related sales occur or (ii) when the performance obligation to which some or all of the royalty has been allocated has been satisfied (or partially satisfied). To date, the Company has not recognized any royalty revenue resulting from any of its sublicensing arrangements.

We invoice customers based on our contractual arrangements with each customer, which may not be consistent with the period that revenues are recognized. When there is a timing difference between when we invoice customers and when revenues are recognized, we record either a contract asset (unbilled accounts receivable) or a contract liability (deferred research and development obligations), as appropriate. If upfront fees or considerations related to sublicensing agreement are received prior to the technology transfer, the Company will record the amount received as deferred revenue from licensing agreement.

We are not required to disclose the value of unsatisfied performance obligations for (i) contracts with an original expected length of one year or less and (ii) contracts for which we recognize revenue at the amount to which we have the right to invoice for services performed.

The Company adopted a practical expedient to expense sales commissions when incurred because the amortization period would be one year or less.

Provision for Contract Losses

The Company assesses the profitability of our collaboration agreements to provide research services to our contracted business partners and identifies those contracts where current operating results or forecasts indicate probable future losses. If the anticipated contract cost exceeds the anticipated contract revenue, a provision for the entire estimated loss on the contract is recorded and then accreted into the statement of operations over the remaining term of the contract. The provision for contract losses is based on judgment and estimates, including revenues and costs, where applicable, the consideration of our business partners' reimbursement, and when such loss is deemed probable to occur and is reasonable to estimate.

Accrued Research and Development Expenses

In order to properly record services that have been rendered but not yet billed to the Company, we review open contracts and purchase orders, communicate with our personnel and we estimate the level of service performed and the associated cost incurred for the service when we have not yet been invoiced or otherwise notified of the actual cost. The majority of our service providers invoice us monthly or quarterly in arrears for services performed or when contractual milestones are met. We make estimates of our accrued expenses as of each balance sheet date in our consolidated financial statements based on facts and circumstances known to us at that time. We periodically confirm the accuracy of our estimates with the service providers and adjust if necessary. Examples of accrued research and development expenses include amounts owed to contract research organizations, to service providers in connection with research and development activities.

Stock-Based Compensation

We have granted stock options to employees, directors and consultants. The fair value of each option award is estimated on the date of grant using the Black-Scholes option-pricing model. The Black-Scholes model considers volatility in the price of our stock, the risk-free interest rate, the estimated life of the option, the closing market price of our stock and the exercise price. For purposes of the calculation, we assumed that no dividends would be paid during the life of the options. We also used the weighted-average vesting period and contractual term of the option as the best estimate of the expected life of a new option, except for the options granted to the CEO (i.e., 5 or 10 years) and certain contractors (i.e., 1 or 3 years). The expected stock price volatility was calculated based on the Company's own volatility since the DuPont Transaction. The Company reviews its volatility assumption on an annual basis and has used the Company's historical volatilities since 2016, as the DuPont Transaction resulted in significant changes in the Company's business and capital structure.

The estimates utilized in the Black-Scholes calculation involve inherent uncertainties and the application of management judgment. These estimates are neither predictive nor indicative of the future performance of our stock. As a result, if other assumptions had been used, our recorded share-based compensation expense could have been materially different from that reported. In addition, because some of the performance-based options issued to employees, consultants and other third-parties vest upon the achievement of certain milestones, the total ultimate expense of share-based compensation is uncertain.

Accounting for Income Taxes

The Company accounts for income taxes under the asset and liability method in accordance with ASC Topic 740, "Income Taxes". Under this method, income tax expense /(benefit) is recognized for: (i) taxes payable or refundable for the current year and (ii) deferred tax consequences of temporary differences resulting from matters that have been recognized in an entity's financial statements or tax returns. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in the results of operations in the period that includes the enactment date. A valuation allowance is provided to reduce the deferred tax assets reported if based on the weight of the available positive and negative evidence, it is more likely than not some portion or all the deferred tax assets will not be realized.

In determining taxable income for the Company's consolidated financial statements, we are required to estimate income taxes in each of the jurisdictions in which we operate. This process requires the Company to make certain estimates of our actual current tax exposure and assessment of temporary differences between the tax and financial statement recognition of revenue and expense. In evaluating the Company's ability to recover its deferred tax assets, the Company must consider all available positive and negative evidence including its past operating results, the existence of cumulative losses in the most recent years and its forecast of future taxable income. Significant management judgment is required in determining our provision for income taxes, deferred tax assets and liabilities and any valuation allowance recorded against our net deferred tax assets.

The Company is required to evaluate the provisions of ASC 740 related to the accounting for uncertainty in income taxes recognized in a company's financial statements. ASC 740 prescribes a comprehensive model for how a company should recognize, present, and disclose uncertain positions that the company has taken or expects to take in its tax return. For those benefits to be recognized, a tax position must be more-likely-than-not to be sustained upon examination by taxing authorities. Differences between tax positions taken or expected to be taken in a tax return and the net benefit recognized and measured pursuant to the interpretation are referred to as "unrecognized benefits." A liability should be recognized (or amount of net operating loss carry forward or amount of tax refundable is reduced) for unrecognized tax benefits, because it represents a company's potential future obligation to the taxing authority for a tax position that was not recognized as a result of applying the provision of ASC 740.

The Company classifies accrued interest and penalties related to its tax positions as a component of income tax expense. The Company currently is not subject to U.S. federal, state and local tax examinations by tax authorities for the years before 2016. The United States Internal Revenue Service (the "IRS") completed its review of the Company's 2016 tax filing on June 8, 2020, and no changes were required. See Note 4 to the Consolidated Financial Statements.

Non-Marketable Investments

The Company also holds investments in non-marketable equity securities of privately-held companies, which usually do not have a readily determinable fair value. Our policy is to measure these investments at cost less impairment, if any, plus or minus changes resulting from observable price changes in orderly transactions for the identical or a similar investment of the same issuer. Such observable price changes may include instances where the investee issues equity securities to new investors, thus creating a new indicator of fair value, as an example. On a quarterly basis, we perform a qualitative assessment considering impairment indicators to evaluate whether these investments are impaired and also monitor for any observable price changes. If indicators of impairment exist, we will prepare a quantitative assessment of the fair value of our equity investments, which may include using both the market and income approaches which require judgment and the use of estimates, including discount rates, investee revenues and costs, and available comparable market data of private and public companies, among others. Valuations of such privately-held companies are inherently complex and uncertain due to the lack of liquid market for the company's securities. In addition, such investments are inherently risky in that such companies are typically at an early stage of development, may have no or limited revenues, may not be or may never become profitable, may not be able to secure additional funding or their technologies, services or products may not be successfully developed or introduced into the market.

The Company bases its fair value estimates on assumptions it believes to be reasonable, but which are unpredictable and inherently uncertain. Actual future results may differ from those estimates.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements.

Recent Accounting Pronouncements

See Note 1 to the Consolidated Financial Statements for information about recent accounting pronouncements.

Results of Operations

Year Ended December 31, 2021 Compared to the Year Ended December 31, 2020

Revenue, Cost of Revenue, and Provision for Contract Losses

The following table summarizes the Company's revenue, cost of research and development revenue, and provision for contract losses for the years ended December 31, 2021 and 2020:

	Year Ended December 31,	
	2021	2020
Research and development revenue	$ 2,403,831	$ 1,601,921
Cost of research and development revenue	$ 1,944,438	$ 1,424,931
Provision for contract losses	$ —	$ 187,388

For each of the years ended December 31, 2021 and 2020, the Company's revenue was generated from fourteen collaborations. The increase in revenue and cost of research and development revenue was due to a number of larger research collaborations conducted during 2021. Provision for contract losses for the year ended December 31, 2020 was related to one research collaboration. At December 31, 2021, the Company recorded the $500,000 upfront payment received from the collaboration and license agreement with Janssen as deferred license revenue.

Research and Development Expenses

Research and development costs are expensed as incurred and primarily include salary and benefits of research personnel, third-party contract research organization services and supply costs.

Research and development expenses for the year ended December 31, 2021 increased to approximately $8,392,000 compared to $3,868,000 for the year ended December 31, 2020. The increase primarily reflected the engagement of a contract research organization and pharmaceutical quality and regulatory consultants to manage and support pre-clinical and clinical development as well as an increase in cGMP manufacturing costs as the Company moves towards its anticipated Phase 1 clinical trial of DYAI-100 COVID-19 vaccine candidate in the amount of approximately $5,145,000 offset by a decrease of $621,000 in other internal research and development costs.

General and Administrative Expenses

General and administrative expenses for the year ended December 31, 2021, increased 10.1% to approximately $6,698,000 compared to $6,085,000 for the year ended December 31, 2020. The increase principally reflected increases in legal expenses of $447,000, insurance premiums and other outside services of $220,000, payroll and share based compensation related costs of $40,000, offset by reductions in business development and investor relations costs of $94,000.

Foreign Currency Exchange

Foreign currency exchange loss for the year ended December 31, 2021, was approximately $97,000 compared to $62,000 for the year ended December 31, 2020. The increase reflected the currency fluctuation of the Euro in comparison to the U.S. dollar.

Interest Income

Interest income for the year ended December 31, 2021, decreased to approximately $52,000 compared to $447,000 for the year ended December 31, 2020. The decrease was primarily due to a decrease in interest rate and yield on the Company's investment grade securities, which are classified as held-to-maturity.

Other Income

For the year ended December 31, 2021, the Company recorded a gain from the sale of its investment in BDI in the amount of approximately $1,606,000. For the year ended December 31, 2020, the Company recorded an unrealized gain from its investment in Alphazyme resulting from a third-party capital contribution in the amount of approximately $285,000.

Income Taxes

The Company had net operating loss ("NOL") carryforwards available as of December 31, 2021, and 2020, in the amount of approximately $39.9 million and $27.3 million, respectively. Approximately $37.1 million of the net operating loss carryforwards will be carried forward indefinitely and will be available to offset 80% of taxable income. The remaining amount of the net operating loss carryforwards will expire at varying dates through 2040.

Income generated in India is subject to Tax Deducted at Source ("TDS"), which is a means of collecting income tax at the source when income is generated rather than at later by the Indian government. The TDS amount paid can be used as foreign tax credit for US tax purposes. However, we do not expect to use the credit due to our operating losses. As a result, the Company recorded a provision for income taxes of approximately $31,000 as a result of TDS for the year ended December 31, 2020. There was no provision for income taxes related to TDS for the year ended December 31, 2021.

Net Loss

Net loss for the year ended December 31, 2021 was approximately $13.1 million compared to a net loss of $9.3 million for the year ended December 31, 2020. The increase in net loss of approximately $3.8 million was principally due to the increase in research and development expenses of $4.5 million, general and administrative expenses of $0.7 million, and cost of research and development revenue of $0.3 million, offset by increases in revenue and other income.

Liquidity and Capital Resources

Our primary source of cash has been the cash received from the DuPont Transaction in December 2015, interest income received from investment grade securities, funding from our research collaboration agreements and license revenue, and funding from the exercise of employee stock options. In August 2021, the Company received approximately $1.6 million from the BDI Sale, In December 2021, the Company received an upfront payment of $0.5 million for a non-exclusive license from Janssen. These receipts improved our cash position and liquidity in 2021.

Our ability to achieve profitability depends on many factors, including our scientific results and our ability to continue to obtain funded research and development collaborations from industry and government programs, as well as sub-license agreements. We may continue to incur substantial operating losses even if we begin to generate revenues from research and development and licensing. Our primary future cash needs are expected to be for general operating activities, including our business development and research expenses, Phase 1 clinical trial, as well as legal and administrative costs as an SEC reporting and NASDAQ listed company.

On August 13, 2020, we entered an Open Market Sale Agreement℠ with Jefferies LLC, or Jefferies, with respect to an at the market offering program under which we may offer and sell, from time to time at our sole discretion, shares of our common stock at an aggregate offering price of up to $50.0 million through Jefferies as our sales agent or principal. This program adds to our financial flexibility to pursue additional opportunities that leverage the broad application potential of C1. However, as of the date of this filing, there have been no sales made under the Open Market Sale Agreement℠.

We rely on our existing cash and cash equivalents, investments in debt securities, and operating cash flow to provide the working capital needs for our operations. We believe that our existing cash position and investments in investment grade securities will be adequate to meet our operational, business, and other liquidity requirements for at least the next twelve (12) months. However, in the event our financing needs for the foreseeable future are not able to be met by our existing cash, cash equivalents and investments, we would seek to raise funds through public or private equity offerings, and through other means to meet our financing requirements. Currently, the Company is self-funding the development and cGMP manufacturing costs of its proprietary COVID-19 vaccine candidate, DYAI-100 towards a Phase 1 clinical trial to demonstrate the safety in humans of a protein produced from the C1-cell protein production platform.

At December 31, 2021, cash and cash equivalents were approximately $15.7 million compared to $20.6 million at December 31, 2020. The carrying value of investment grade securities, including accrued interest at December 31, 2021 was approximately $4.6 million compared to $8.6 million at December 31, 2020.

Net cash used in operating activities for the year ended December 31, 2021 of approximately $11.3 million resulted from a net loss of $13.1 million adjusted by a gain from the sale of investment in BDI of $1.6 million, offset by share-based compensation expenses of $1.8 million, amortization of held-to-maturity securities of $0.3 million, and changes in other operating assets and liabilities of $1.3 million.

Net cash used in operating activities for the year ended December 31, 2020 of approximately $6.6 million resulted from a net loss of $9.3 million adjusted by an unrealized gain from investment in Alphazyme of $0.3 million, offset by share-based compensation expenses of $1.7 million, amortization of held-to-maturity securities of $0.3 million, and changes in other operating assets and liabilities of $1.0 million.

Net cash provided by investing activities for the year ended December 31, 2021 was approximately $5.2 million compared to $22.1 million for the year ended December 31, 2020. Cash flows from investing activities in 2021 were primarily related to proceeds from maturities, net of purchases of investment grade debt securities, and proceeds from the sale of our equity interest in BDI. Cash flows from investing activities in 2020 were primarily related to proceeds from maturities, net of purchases of investment grade debt securities.

Net cash provided by financing activities for the year ended December 31, 2021 was approximately $1.2 million compared to $0.3 million for the year ended December 31, 2020. Cash flows from financing activities in 2021 and 2020 were primarily related to proceeds received from the exercise of stock options.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk

We are a smaller reporting company as defined by Rule 12b-2 of the Exchange Act and are not required to provide the information required under this item.

Item 8. Financial Statements and Supplementary Data

All financial statements required pursuant to this item, including the report of our independent registered public accounting firm, are presented beginning on page F-1.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and procedures

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and our Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2021. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC rules and forms. Based on the evaluation of our disclosure controls and procedures as of December 31, 2021, our Chief Executive Officer and Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were effective.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate "internal control over financial reporting," as defined in Rule 13a-15(f) under the Exchange Act. Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2021 based on the criteria set forth in the Internal Control-Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on the assessment, our management has concluded that our internal control over financial reporting was effective as of December 31, 2021. This Report does not include an attestation report of our independent registered public accounting firm regarding internal control over financial reporting. Management's report was not subject to attestation by our independent registered public accounting firm pursuant to the rules of the SEC that permit us to provide only management's report in this Report because we are a "smaller reporting company."

Changes in Internal Controls Over Financial Reporting

There were no changes in our internal control over financial reporting identified in connection with the evaluation required by Rule 13a-15(d) and 15d- 15(d) of the Exchange Act that occurred during the year ended December 31, 2021 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. We have not experienced any material impact to our internal controls over financial reporting despite the fact that most of our employees are working remotely due to the COVID-19 pandemic. We are continually monitoring and assessing the COVID-19 situation on our internal controls to minimize the impact on their design and operating effectiveness.

Inherent Limitation on Effectiveness of Controls

A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within our Company have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of a simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the controls. The design of any system of controls is also based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions; over time, controls may become inadequate because of changes in conditions, or the degree of compliance with policies or procedures may deteriorate. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

Item 9B. Other Information

None.

Item 9C. Disclosure regarding foreign jurisdictions that prevent inspections

Not applicable

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this item is incorporated by reference to the Company's definitive proxy statement relating to the 2022 annual meeting of shareholders. The definitive proxy statement will be filed with the Securities and Exchange Commission within 120 days after the end of the 2021 fiscal year.

Item 11. Executive Compensation

The information required by this item is incorporated by reference to the Company's definitive proxy statement relating to the 2022 annual meeting of shareholders. The definitive proxy statement will be filed with the Securities and Exchange Commission within 120 days after the end of the 2021 fiscal year.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this item is incorporated by reference to the Company's definitive proxy statement relating to the 2022 annual meeting of shareholders. The definitive proxy statement will be filed with the Securities and Exchange Commission within 120 days after the end of the 2021 fiscal year.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this item is incorporated by reference to the Company's definitive proxy statement relating to the 2022 annual meeting of shareholders. The definitive proxy statement will be filed with the Securities and Exchange Commission within 120 days after the end of the 2021 fiscal year.

Item 14. Principal Accounting Fees and Services

The information required by this item is incorporated by reference to the Company's definitive proxy statement relating to the 2022 annual meeting of shareholders. The definitive proxy statement will be filed with the Securities and Exchange Commission within 120 days after the end of the 2021 fiscal year.

PART IV

Item 15. Financial Statement and Exhibits

(a) Financial Statement

Our financial statements and related notes thereto are listed and included in this Annual Report on Form 10-K beginning on page F-1.

(b) Exhibits

Exhibit No.	Description of Exhibit	Incorporated by Reference			Filed Herewith
		Form	Original No.	Date Filed	
2.1*#	Investment Shareholders Agreement with respect to Biotechnology Developments for Industry, S.L. and VLP The Vaccines Company, S.L.U. dated June 30, 2017	10-12G	2.1	January 14, 2019	
2.2#	Sale and Purchase of Shares Agreement of Biotechnology Developments for Industry, S.L. dated July 26, 2021	8-K	10.1	July 27, 2021	
2.3#	Sale and Purchase of Shares Agreement of VLP The Vaccine Company, S.L.U. dated July 26, 2021	8-K	10.2	July 27, 2021	
2.4#	Amendment No. 1 dated July 26, 2021 to the Service Framework Agreement dated June 30, 2017	8-K	10.3	July 27, 2021	
3.1#	Restated Certificate of Incorporation dated November 1, 2004	10-12G	3.1	January 14, 2019	
3.2#	Second Amended and Restated Bylaws dated December 13, 2018	10-12G	3.2	January 14, 2019	
4.1#	Specimen Stock Certificate Evidencing Shares of Common Stock	10-12G	4.1	January 14, 2019	
4.2#	Description of Securities	S-3		August 13, 2020	
10.1**#	Dyadic International, Inc. 2011 Equity Incentive Plan	10-12G	10.2	January 14, 2019	
10.2**#	Dyadic International, Inc. 2021 Equity Incentive Plan	S-8	4.3	August 12, 2021	
10.3**#	POST-EFFECTIVE AMENDMENT NO. 1 TO FORM S-8 for Dyadic International, Inc. 2006 Stock Option Plan, Dyadic International, Inc. 2011 Equity Incentive Plan, and Dyadic International, Inc. 2021 Equity Incentive Plan	S-8 POS		August 12, 2021	
10.4**#	Form of Restricted Stock Unit Agreement Pursuant to the Dyadic International, Inc. 2011 Equity Incentive Plan	10-12G	10.3	January 14, 2019	
10.5**#	Form of Stock Option Agreement Pursuant to the Dyadic International, Inc. 2011 Equity Incentive Plan	10-12G	10.4	January 14, 2019	
10.6**#	Employment Agreement, dated June 16, 2016, and First Amendment dated January 23, 2017, by and between Dyadic International, Inc. and Mark A. Emalfarb	10-12G	10.5	January 14, 2019	
10.6.1**#	Second Amendment to Employment Agreement between Dyadic International, Inc. and Mark A. Emalfarb, dated as of November 12, 2019	8-K	10.1	November 13, 2019	
10.7**#	Consulting Agreement, dated January 1, 2016, by and between Dyadic Netherlands B.V. and Sky Blue Biotech kft on behalf of Ronen Tchelet	10-12G	10.7	January 14, 2019	
10.8**#	Consulting Agreement, dated March 13, 2017, by and between Dyadic International, Inc. and Novaro Ltd. on behalf of Matthew Jones	10-12G	10.8	January 14, 2019	
10.9**#	Compensation Letter, dated March 26, 2018, by and between Dyadic International, Inc. and Ping W. Rawson	10-12G	10.9	January 14, 2019	
10.10**#	Employment Agreement between Dyadic International Inc. and Joseph Hazelton dated November 9, 2021	8-K	10.1	November 9, 2021	
10.11#	Form of Director and Officer Indemnification Agreement	10-12G	10.10	January 14, 2019	
10.12#	Intracoastal Pointe Office Building Lease Agreement by and between Dyadic International, Inc. and Quentin Partners Co. dated December 30, 2010 and Renewal of Lease dated June 8, 2018	10-K	10.11	March 30, 2020	
10.12.1	Intracoastal Pointe Office Building Lease Agreement by and between Dyadic International, Inc. and Quentin Partners Co. dated December 30, 2010 and Renewal of Lease dated August 13, 2021				X
10.13†#	Pharma License Agreement with Danisco US, Inc. dated December 31, 2015	10-12G	10.12	January 14, 2019	
10.14†#	Commission Contract with VTT Technical Research Centre of Finland Ltd dated September 2, 2016	10-12G	10.13	January 14, 2019	
10.14.1†#	Commission Contract with VTT Technical Research Centre of Finland Ltd dated June 28, 2019	8-K	10.1	July 5, 2019	
10.15†#	Research Services Agreement with Biotechnology Developments for Industry in Pharmaceuticals, S.L.U. dated June 30, 2017	10-12G	10.14	January 14, 2019	
10.16†#	Service Framework Agreement with Biotechnology Developments for Industry in Pharmaceuticals, S.L.U. dated June 30, 2017	10-12G	10.15	January 14, 2019	
10.17†#	Feasibility Study Agreement with Sanofi-Aventis Deutschland GmbH dated September 7, 2018	10-12G	10.16	January 14, 2019	
10.18†#	License Agreement with VTT Technical Research Centre of Finland Ltd dated July 17, 2017	10-12G	10.17	January 14, 2019	

10.19†#	Research and Commercialization Collaboration Agreement with Serum Institute of India Pvt. Ltd., dated May 7, 2019	8-K	10.1	May 8, 2019	
10.20†#	Non-Exclusive Sublicense Agreement among Dyadic International, Inc., Alphazyme, LLC, dated May 5, 2019	8-K	10.1	May 8, 2019	
10.20.1†#	Amended and Restated Non-Exclusive Sublicense Agreement among Dyadic International, Inc., Alphazyme, LLC, dated June 24, 2020	8-K	10.1	June 29, 2020	
10.21†#	Sub-License Agreement among Dyadic International (USA), Inc., Luina Bio Pty Ltd. and Novovet Pty Ltd, dated April 26, 2019	8-K	10.1	May 2, 2019	
10.21.1†#	Shareholders Agreement among Dyadic International (USA), Inc., JCL Biologics Pty Ltd and Novovet Pty Ltd, dated April 26, 2019	8-K	10.2	May 2, 2019	
10.22#	Open Market Sale Agreement by and between the Company and Jefferies LLC, dated August 13, 2020	S-3	1.2	August 13, 2020	
10.23#	Master Services Agreement and Work Order, between Dyadic International (USA), Inc. and CR2O B.V., Dated May 28, 2021	8-K	10.1	June 3, 2021	
10.24#	Term Sheet for Intellectual Property License Agreement dated August 10, 2021	8-K	10.1	August 11, 2021	
10.25†#	Research, License, and Collaboration Agreement with Janssen dated December 16, 2021	8-K	10.1	December 16, 2021	
14	Code of Ethics (1)				(1)
21.1#	Subsidiaries of the Registrant	10-12G	21.1	January 14, 2019	
23.1	Consent of Independent Registered Public Accounting Firm				x
31.1	Certification of Chief Executive Officer of Dyadic Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002				x
31.2	Certification of Chief Financial Officer of Dyadic Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002				x
32.1	Certification of Chief Executive Officer of Dyadic Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002				x
32.2	Certification of Chief Financial Officer of Dyadic Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002				x

Exhibit No.	Description
101.INS	Inline XBRL Instance Document
101.SCH	Inline XBRL Taxonomy Extension Schema Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Labels Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

Notes:

* This filing excludes schedules and similar attachments pursuant to Item 601(b)(2) of Regulation S-K. A copy of any omitted schedule will be furnished supplementary to the SEC upon request; provided, however, that the parties may request confidential treatment pursuant to Rule 24b-2 of the Exchange Act for any document so furnished.

** Identifies each management contract or compensatory plan or arrangement.

† Portions of the exhibits have been omitted pursuant to a request for confidential treatment.

Previously filed with the SEC.

(1) The Company elect to satisfy Regulation S-K §229.406(c) by posting its Code of Ethics on its website at www.dyadic.com.

Item 16. Form 10-K Summary

Not applicable.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

DYADIC INTERNATIONAL, INC.

March 29, 2022	By:	/s/ Mark A. Emalfarb Mark A. Emalfarb President and Chief Executive Officer (Principal Executive Officer)
March 29, 2022	By:	/s/ Ping W. Rawson Ping W. Rawson Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)

Pursuant to the requirements of Securities Exchange Act of 1934, as amended, this Annual Report has been signed below by the following persons on behalf of the registrant in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Mark A. Emalfarb Mark A. Emalfarb	Chief Executive Officer, Director (Principal Executive Officer)	March 29, 2022
/s/ Ping W. Rawson Ping W. Rawson	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	March 29, 2022
/s/ Michael P. Tarnok Michael P. Tarnok	Chairman, Director	March 29, 2022
/s/ Jack L. Kaye Jack L. Kaye	Director	March 29, 2022
/s/ Seth J. Herbst Seth J. Herbst, MD	Director	March 29, 2022
/s/Arindam Bose Arindam Bose, Ph.D.	Director	March 29, 2022
/s/Barry C. Buckland Barry C. Buckland, Ph.D.	Director	March 29, 2022
/s/ Patrick Lucy Patrick Lucy	Director	March 29, 2022

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Report of Independent Registered Public Accounting Firm

To the Board of Directors and
Stockholders of Dyadic International, Inc.:

To the Board of Directors and Stockholders of Dyadic International, Inc.:

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Dyadic International, Inc. and Subsidiaries (the "Company") as of December 31, 2021 and 2020, and the related consolidated statements of operations, stockholders' equity, and cash flows for each of the two years in the period ended December 31, 2021, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2021 and 2020, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2021, in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

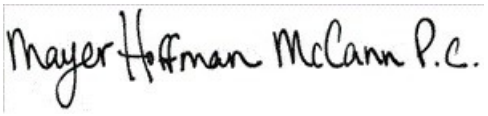
These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

Critical audit matters are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. We determined that there are no critical audit matters.



We have served as the Company's auditor since 2008.
St. Peterburg, Florida
March 29, 2022

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DYADIC INTERNATIONAL, INC. AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS

	December 31,	
	2021	**2020**
Assets		
Current assets:		
Cash and cash equivalents	$ 15,748,480	$ 20,637,045
Short-term investment securities	4,511,780	8,457,452
Interest receivable	94,375	112,247
Accounts receivable	277,831	294,199
Prepaid expenses and other current assets	375,830	280,555
Total current assets	21,008,296	29,781,498
Non-current assets:		
Investment in Alphazyme	284,709	284,709
Other assets	6,117	6,225
Total assets	$ 21,299,122	$ 30,072,432
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 1,547,953	$ 1,013,099
Accrued expenses	709,560	489,756
Deferred research and development obligations	151,147	123,016
Deferred license revenue, current portion	147,059	—
Total current liabilities	2,555,719	1,625,871
Deferred license revenue, net of current portion	352,941	—
Total liabilities	2,908,660	1,625,871
Commitments and contingencies (Note 5)		
Stockholders' equity:		
Preferred stock, $.0001 par value:		
Authorized shares - 5,000,000; none issued and outstanding	—	—
Common stock, $.001 par value:		
Authorized shares - 100,000,000; issued shares - 40,482,659 and 39,747,659, outstanding shares - 28,229,157 and 27,494,157 as of December 31, 2021 and 2020, respectively	40,483	39,748
Additional paid-in capital	101,026,496	98,013,079
Treasury stock, shares held at cost - 12,253,502	(18,929,915)	(18,929,915)
Accumulated deficit	(63,746,602)	(50,676,351)
Total stockholders' equity	18,390,462	28,446,561
Total liabilities and stockholders' equity	$ 21,299,122	$ 30,072,432

The accompanying notes are an integral part of these audited consolidated financial statements

DYADIC INTERNATIONAL, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF OPERATIONS

	Years Ended December 31,	
	2021	**2020**
Revenues:		
Research and development revenue	$ 2,403,831	$ 1,601,921
Costs and expenses:		
Costs of research and development revenue	1,944,438	1,424,931
Provision for contract losses	—	187,388
Research and development	8,392,370	3,868,121
General and administrative	6,697,617	6,084,799
Foreign currency exchange loss	96,893	62,345
Total costs and expenses	17,131,318	11,627,584
Loss from operations	(14,727,487)	(10,025,663)
Other income:		
Interest income	51,704	446,999
Gain from the sale of investments in BDI	1,605,532	—
Unrealized gain from investment in Alphazyme	—	284,709
Total other income	1,657,236	731,708
Loss before income taxes	(13,070,251)	(9,293,955)
Provision for income taxes	—	31,318
Net loss	$ (13,070,251)	$ (9,325,273)
Basic and diluted net loss per common share	$ (0.47)	$ (0.34)
Basic and diluted weighted-average common shares outstanding	27,838,047	27,471,587

The accompanying notes are an integral part of these audited consolidated financial statements

DYADIC INTERNATIONAL, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

	Common Stock		Treasury Stock		Additional paid-in capital	Accumulated deficit	Total
	Shares	Amount	Shares	Amount			
Balance at December 31, 2019	39,612,659	$ 39,613	(12,253,502)	$ (18,929,915)	$ 96,105,851	$ (41,351,078)	$ 35,864,471
Stock-based compensation expenses	—	—	—	—	1,651,893	—	1,651,893
Issuance of common stock upon exercise of stock options	135,000	135	—	—	255,335	—	255,470
Net loss	—	—	—	—	—	(9,325,273)	(9,325,273)
Balance at December 31, 2020	39,747,659	$ 39,748	(12,253,502)	$ (18,929,915)	$ 98,013,079	$ (50,676,351)	$ 28,446,561
Stock-based compensation expenses	—	—	—	—	1,784,102	—	1,784,102
Issuance of common stock upon exercise of stock options	735,000	735	—	—	1,229,315	—	1,230,050
Net loss	—	—	—	—	—	(13,070,251)	(13,070,251)
Balance at December 31, 2021	40,482,659	$ 40,483	(12,253,502)	$ (18,929,915)	$ 101,026,496	$ (63,746,602)	$ 18,390,462

The accompanying notes are an integral part of these audited consolidated financial statements

DYADIC INTERNATIONAL, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31,	
	2021	**2020**
Cash flows from operating activities		
Net loss	$ (13,070,251)	$ (9,325,273)
Adjustments to reconcile net loss to net cash used in operating activities:		
Stock-based compensation expense	1,784,102	1,651,893
Amortization of held-to-maturity securities, net	329,612	331,277
Unrealized gain from investment in Alphazyme	—	(284,709)
Gain from the sale of investment in BDI	(1,605,532)	—
Foreign currency exchange loss	96,893	62,345
Changes in operating assets and liabilities:		
Interest receivable	17,872	217,464
Accounts receivable	(31,792)	363,365
Income tax receivable	—	500,616
Prepaid expenses and other current assets	(95,366)	(2,410)
Accounts payable	549,562	(53,200)
Accrued expenses	219,824	(80,132)
Deferred license revenue	500,000	—
Deferred research and development obligations	28,131	44,372
Net cash used in operating activities	**(11,276,945)**	**(6,574,392)**
Cash flows from investing activities		
Purchases of held-to-maturity investment securities	(11,283,940)	(17,638,947)
Proceeds from maturities of investment securities	14,900,000	39,761,000
Proceeds from the sale of investment in BDI	1,605,532	—
Net cash provided by investing activities	**5,221,592**	**22,122,053**
Cash flows from financing activities		
Proceeds from exercise of options	1,230,050	255,470
Net cash provided by financing activities	**1,230,050**	**255,470**
Effect of exchange rate changes on cash	(63,262)	10,370
Net (decrease) increase in cash and cash equivalents	**(4,888,565)**	**15,813,501**
Cash and cash equivalents at beginning of period	20,637,045	4,823,544
Cash and cash equivalents at end of period	$ **15,748,480**	$ **20,637,045**
Supplemental cash flow information		
Cash received from income tax refund	—	$ 500,616

The accompanying notes are an integral part of these audited consolidated financial statements

Note 1: Organization and Summary of Significant Accounting Policies

Description of Business

Dyadic International, Inc. ("Dyadic", "we", "us", "our", or the "Company") is a global biotechnology platform company based in Jupiter, Florida with operations in the United States and a satellite office in the Netherlands, and it utilizes a number of third-party consultants and research organizations to carry out the Company's activities. Over the past two plus decades, the Company has developed a gene expression platform for producing commercial quantities of industrial enzymes and other proteins, and has previously licensed this technology to third parties, such as Abengoa Bioenergy, BASF, Codexis and others, for use in industrial (non-pharmaceutical) applications. This technology is based on the *Thermothelomyces heterothallica* (formerly known as *Myceliophthora thermophila*) fungus, which the Company named C1. The C1-cell protein production platform is a robust and versatile thermophilic filamentous fungal expression system for the development and production of biologic products including enzymes and other proteins.

On December 31, 2015, the Company sold its industrial technology business to Danisco USA ("Danisco"), the industrial biosciences business of DuPont (NYSE: DD) (the "DuPont Transaction"). As part of the DuPont Transaction, Dyadic retained co-exclusive rights to the C1-cell protein production platform for use in all human and animal pharmaceutical applications, and currently the Company has the exclusive ability to enter into sub-license agreements (subject to the terms of the license and to certain exceptions) for use in all human and animal pharmaceutical applications. Danisco retained certain rights to utilize the C1-cell protein production platform in pharmaceutical applications, including the development and production of pharmaceutical products, for which it will be required to make royalty payments to Dyadic upon commercialization. In certain circumstances, Dyadic may owe a royalty to either Danisco or certain licensors of Danisco, depending upon whether Dyadic elects to utilize certain patents either owned by Danisco or licensed in by Danisco.

After the DuPont Transaction, the Company has primarily been focused on the animal and human biopharmaceutical industries, specifically in further improving and applying the proprietary C1-cell protein production platform into a safe and efficient protein production platform to help speed up the development, lower production costs and improve the performance of biologic vaccines and drugs and other biological products at flexible commercial scales. Some examples of human and animal vaccines and drugs which have the potential to be produced from C1-cells are protein antigens, virus-like particles ("VLPs"), monoclonal antibodies ("mAbs"), Bi/Tri-specific antibodies, Fab antibody fragments, Fc-fusion proteins, as well as other therapeutic enzymes and proteins. The Company is involved in multiple funded research collaborations with animal and human pharmaceutical companies which are designed to leverage its C1-cell protein production platform to develop innovative vaccines and drugs, biosimilars and/or biobetters. Additionally, the Company has begun to develop other technologies that have potential applications in non-pharmaceutical markets.

Impact of COVID-19

The outbreak of COVID-19 has led to adverse impacts on the U.S. and global economies and created uncertainty regarding the potential impact to the Company's employees, operations, and research projects.

The extent to which the COVID-19 pandemic will directly or indirectly impact our business will depend on future developments that are highly uncertain, including as a result of new information that may emerge concerning the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and its variants and the actions taken and the level of success to contain or treat the SARS-CoV-2 virus and its variants, the economic impact on local, regional, national and international business partners and markets, delays or disruptions in our on-going research projects, and unavailability of the employees of the Company or third-party contract research organizations with whom we conduct business, due to illness or quarantines, all of which are highly uncertain and cannot be predicted at this time. Management is actively monitoring this situation and the possible effects on its financial condition, liquidity, operations, vendors, industry, and workforce. Even after the COVID-19 pandemic has subsided, the Company may continue to experience adverse impacts to its business because of economic recession or depression that has occurred or may occur in the future. Given the daily evolution of the COVID-19 outbreak and the ongoing response to curb its spread (including government travel and meeting restrictions), currently we are not able to accurately estimate the effects of the COVID-19 outbreak to our results of operations, financial condition, or liquidity.

Liquidity and Capital Resources

We rely on our existing cash and cash equivalents, investments in debt securities, and operating cash flow to provide the working capital needs for our operations. We believe that our existing cash position and investment in investment grade securities will be adequate to meet our operational, business, and other liquidity requirements for at least the next twelve (12) months. However, in the event our financing needs for the foreseeable future are not able to be met by our existing cash, cash equivalents and investments, we would seek to raise funds through public or private equity offerings, and through other means to meet our financing requirements. Additionally, the Company may decide to fund all of a Phase I clinical trial to demonstrate the safety in humans of a protein produced from the C1-cell protein production platform in humans. There is no assurance that external funding will be available at acceptable terms, if at all, and the Company may, therefore, self-fund these vital projects.

Summary of Significant Accounting Policies

Basis of Presentation

The accompanying audited consolidated financial statements include the accounts of the Company and its wholly owned subsidiaries. Dyadic consolidates entities in which we have a controlling financial interest. We consolidate subsidiaries in which we hold and/or control, directly or indirectly, more than 50% of the voting rights. All significant intra-entity transactions and balances have been eliminated in consolidation. These consolidated financial statements have been prepared in conformity with U.S. generally accepted accounting principles ("GAAP").

Since concluding the DuPont Transaction, the Company has conducted business in one operating segment, which is identified by the Company based on how resources are allocated, and operating decisions are made. Management evaluates performance and allocates resources based on the Company as a whole.

Use of Estimates

The preparation of these consolidated financial statements in accordance with GAAP requires management to make estimates and judgments that affect the reported amount of assets and liabilities and related disclosure of contingent assets and liabilities at the date of our consolidated financial statements and the reported amounts of revenues and expenses during the applicable period. Actual results may differ from these estimates under different assumptions or conditions. Such differences could be material to the consolidated financial statements.

Concentrations and Credit Risk

The Company's financial instruments that are potentially subject to concentrations of credit risk consist primarily of cash and cash equivalents, investment securities, and accounts receivable. At times, the Company has cash, cash equivalents, and investment securities at financial institutions exceeding the Federal Depository Insurance Company ("FDIC") and the Securities Investor Protection Corporation ("SIPC") insured limit on domestic currency and the Netherlands FDIC counterpart for foreign currency. The Company only deals with reputable financial institutions and has not experienced any losses in such accounts.

For each of the years ended December 31, 2021 and 2020, the Company's revenue was generated from fourteen customers. As of December 31, 2021 and 2020, the Company's accounts receivable was from eight and nine customers, respectively. The loss of business from one or a combination of the Company's customers could adversely affect its operations.

The Company conducts operations in the Netherlands through its foreign subsidiary and generates a portion of its revenues from customers that are located outside of the United States. For the years ended December 31, 2021 and 2020, the Company had eight and seven customers outside of the United Sates (i.e. European and Asian customers) that accounted for approximately $1,716,000 or 71.3% and $796,000 or 49.7% of total revenue, respectively. As of December 31, 2021 and 2020, the Company had four and seven customers outside of the United Sates (i.e. European and Asian customers) that accounted for approximately $157,000 or 56.4% and $123,000 or 41.6% of accounts receivable, respectively.

The Company uses several contract research organizations ("CROs") to conduct its research projects. For the years ended December 31, 2021 and 2020, three and one CRO(s) accounted for approximately $9,061,000 or 95.1% and $4,576,000 or 91.6% of total research services we purchased, respectively. As of December 31, 2021, two CROs accounted for approximately $1,312,000 or 84.8% of accounts payable. As of December 31, 2020, one CRO accounted for approximately $690,000 or 68.1% of accounts payable. The loss of business from this CRO or a combination of the Company's CROs could adversely affect its operations.

Cash and Cash Equivalents

We treat highly liquid investments with original maturities of three months or less when purchased as cash equivalents, including money market funds, which are unrestricted for withdrawal or use.

Investment Securities

The Company invests excess cash balances in short-term and long-term investment grade securities. Short-term investment securities mature within twelve (12) months or less, and long-term investment securities mature over twelve (12) months from the applicable reporting date. Management determines the appropriate classification of its investments at the time of purchase and reevaluates the classifications at each balance sheet date. The Company's investments in debt securities have been classified and accounted for as held-to-maturity. Held-to-maturity securities are those securities that the Company has the ability and intent to hold until maturity. Held-to-maturity securities are recorded at amortized cost, adjusted for the amortization or accretion of premiums or discounts. Premiums and discounts are amortized over the life of the related held-to-maturity security. When a debt security is purchased at a premium, both the face value of the debt and premium amount are reflected as investing outflow. Other-than-temporary impairment charges, if incurred, will be included in other income (expense).

As of December 31, 2021 and 2020, all of our money market funds were invested in U.S. Government money market funds. The Company did not have any investment securities classified as trading as of December 31, 2021 and 2020.

Accounts Receivable

Accounts receivable consist of billed receivables currently due from customers and unbilled receivables. Unbilled receivables represent the excess of contract revenue (or amounts reimbursable under contracts) over billings to date. Such amounts become billable in accordance with the contract terms, which usually consider the passage of time, achievement of certain milestones or completion of the project.

Outstanding account balances are reviewed individually for collectability. The allowance for doubtful accounts is the Company's best estimate of the amount of probable credit losses in the Company's existing accounts receivable. Substantially all of our accounts receivable were current and include unbilled amounts that will be billed and collected over the next twelve (12) months. There was no allowance for doubtful accounts as of December 31, 2021 and 2020.

Accounts receivable consist of the following:

	December 31,	
	2021	2020
Billed receivable	$ 101,175	$ 130,532
Unbilled receivable	176,656	163,667
	$ 277,831	$ 294,199

Prepaid Expenses and Other Current Assets

Prepaid expenses and other current assets consist of the following:

	December 31,	
	2021	2020
Prepaid insurance	$ 326,712	$ 204,988
Prepaid expenses - various	45,839	72,403
Prepaid taxes	3,279	3,164
	$ 375,830	$ 280,555

Accounts Payable

Accounts payable consist of the following:

	December 31,	
	2021	2020
Research and development expenses	$ 1,363,889	$ 904,572
Legal expenses	27,675	24,496
Other	156,389	84,031
	$ 1,547,953	$ 1,013,099

Accrued Expenses

Accrued expenses consist of the following:

	December 31,	
	2021	2020
Employee wages and benefits	$ 405,758	$ 447,881
Research and development expenses	194,250	28,508
Other	109,552	13,367
	$ 709,560	$ 489,756

Revenue Recognition

The Company has no products approved for sale at this point. All of our revenue to date has been research revenue from third-party collaborations and government grants, as well as revenue from sublicensing agreements and collaborative arrangements, which may include upfront payments, options to obtain a license, payment for research and development services, milestone payments and royalties, in the form of cash or non-cash considerations (e.g., minority equity interest).

Revenue related to research collaborations and agreements: The Company typically performs research and development services as specified in each respective agreement on a best efforts basis, and recognizes revenue from research funding under collaboration agreements in accordance with the 5-step process outlined in ASC Topic 606 ("Topic 606"): (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the entity satisfies a performance obligation. We recognize revenue when we satisfy a performance obligation by transferring control of the service to a customer in an amount that reflects the consideration that we expect to receive. Depending on how the performance obligation under our license and collaboration agreements is satisfied, we elected to recognize the revenue either at a point in time or over time by using the input method under Topic 606 to measure the progress toward complete satisfaction of a performance obligation.

Under the input method, revenue will be recognized based on the entity's efforts or inputs to the satisfaction of a performance obligation (e.g., resources consumed, labor hours expended, costs incurred, or time elapsed) relative to the total expected inputs to the satisfaction of that performance obligation. The Company believes that the cost-based input method is the best measure of progress to reflect how the Company transfers its performance obligation to a customer. In applying the cost-based input method of revenue recognition, the Company uses actual costs incurred relative to budgeted costs to fulfill the performance obligation. These costs consist primarily of full-time equivalent effort and third-party contract costs. Revenue will be recognized based on actual costs incurred as a percentage of total budgeted costs as the Company completes its performance obligations.

A cost-based input method of revenue recognition requires management to make estimates of costs to complete the Company's performance obligations. In making such estimates, significant judgment is required to evaluate assumptions related to cost estimates. The cumulative effect of revisions to estimated costs to complete the Company's performance obligations will be recorded in the period in which changes are identified and amounts can be reasonably estimated. A significant change in these assumptions and estimates could have a material impact on the timing and amount of revenue recognized in future periods.

Revenue related to grants: The Company may receive grants from governments, agencies, and other private and not-for-profit organizations. These grants are intended to be used to partially or fully fund the Company's research collaborations, including opportunities arising in connection with COVID-19 that the Company is pursuing with certain collaborators. However, most, if not all, of such potential grant revenues, if received, is expected to be earmarked for third parties to advance the research required, including preclinical and clinical trials for SARS-CoV-2 vaccines and/or antibodies candidates.

Revenue related to sublicensing agreements: If the sublicense to the Company's intellectual property is determined to be distinct from the other performance obligations identified in the arrangement, the Company recognizes revenue allocated to the license when technology is transferred to the customer and the customer is able to use and benefit from the license.

Customer options: If the sublicensing agreement includes customer options to purchase additional goods or services, the Company will evaluate if such options are considered material rights to be deemed as separate performance obligations at the inception of each arrangement.

Milestone payments: At the inception of each arrangement that includes development, commercialization, and regulatory milestone payments, the Company evaluates whether the achievement of the milestones is considered probable and estimates the amount to be included in the transaction price. If the milestone payment is in exchange for a sublicense and is based on the sublicensee's subsequent sale of product, the Company recognizes milestone payment by applying the accounting guidance for royalties. To date, the Company has not recognized any milestone payment revenue resulting from any of its sublicensing arrangements.

Royalties: With respect to licenses deemed to be the predominant item to which the sales-based royalties relate, including milestone payments based on the level of sales, the Company recognizes revenue at the later of (i) when the related sales occur or (ii) when the performance obligation to which some or all of the royalty has been allocated has been satisfied (or partially satisfied). To date, the Company has not recognized any royalty revenue resulting from any of its sublicensing arrangements.

We invoice customers based on our contractual arrangements with each customer, which may not be consistent with the period that revenues are recognized. When there is a timing difference between when we invoice customers and when revenues are recognized, we record either a contract asset (unbilled accounts receivable) or a contract liability (deferred research and development obligations), as appropriate. If upfront fees or considerations related to sublicensing agreement are received prior to the technology transfer, the Company will record the amount received as deferred revenue from licensing agreement.

We are not required to disclose the value of unsatisfied performance obligations for (i) contracts with an original expected length of one year or less and (ii) contracts for which we recognize revenue at the amount to which we have the right to invoice for services performed.

The Company adopted a practical expedient to expense sales commissions when incurred because the amortization period would be one year or less.

Research and Development Costs

Research and development ("R&D") costs are expensed as incurred. R&D costs are related to the Company's internally funded pharmaceutical programs and other governmental and commercial projects.

Research and development costs consist of personnel-related costs, facilities, research-related overhead, services from independent contract research organizations, and other external costs. Research and development costs, during the years ended December 31, 2021 and 2020 were as follows:

	Years Ended December 31,	
	2021	2020
Outside contracted services	$ 7,607,035	$ 3,302,034
Personnel related costs	669,328	531,405
Facilities, overhead and other	116,007	34,682
	$ 8,392,370	$ 3,868,121

Provision for Contract Losses

The Company assesses the profitability of our collaboration agreements to provide research services to our contracted business partners and identifies those contracts where current operating results or forecasts indicate probable future losses. If an anticipated contract cost exceeds anticipated contract revenue, a provision for the entire estimated loss on the contract is recorded and then accreted into the statement of operations over the remaining term of the contract. The provision for contract losses is based on judgment and estimates, including revenues and costs, where applicable, the consideration of our business partners' reimbursement, and when such loss is deemed probable to occur and is reasonable to estimate.

Foreign Currency Transaction Gain or Loss

The Company and its foreign subsidiary use the U.S. dollar as its functional currency, and initially measure the foreign currency denominated assets and liabilities at the transaction date. Monetary assets and liabilities are then re-measured at exchange rates in effect at the end of each period, and property and non-monetary assets and liabilities are converted at historical rates.

Fair Value Measurements

The Company applies fair value accounting for certain financial instruments that are recognized or disclosed at fair value in the financial statements. The Company defines fair value as the price that would be received from selling an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Fair value is estimated by applying the following hierarchy, which prioritizes the inputs used to measure fair value into three levels and bases the categorization within the hierarchy upon the lowest level of input that is available and significant to the fair value measurement:

- Level 1 – Quoted prices in active markets for identical assets or liabilities.
- Level 2 – Observable inputs other than quoted prices in active markets for identical assets and liabilities, quoted prices for identical or similar assets or liabilities in inactive markets, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.
- Level 3 – Inputs that are generally unobservable and typically reflect management's estimate of assumptions that market participants would use in pricing the asset or liability.

The Company's financial instruments included cash and cash equivalents, investment in debt securities, accounts receivable, accounts payable and accrued expenses, accrued payroll and related liabilities, deferred research and development obligations and deposits. The carrying amount of these financial instruments, except for investment in debt securities, approximates fair value due to the short-term maturities of these instruments. The Company's short-term and long-term investments in debt securities are recorded at amortized cost, and their estimated fair value amounts are provided by the third-party broker service for disclosure purposes.

Non-Marketable Investments

The Company also holds investments in non-marketable equity securities of privately-held companies, which usually do not have a readily determinable fair value. Our policy is to measure these investments at cost less impairment, if any, plus or minus changes resulting from observable price changes in orderly transactions for the identical or a similar investment of the same issuer such observable price changes may include instances where the investee issues equity securities to new investors, thus creating a new indicator of fair value, as an example. On a quarterly basis, we perform a qualitative assessment considering impairment indicators to evaluate whether these investments are impaired and also monitor for any observable price changes. If indicators of impairment exist, we will prepare a quantitative assessment of the fair value of our equity investments, which may include using both the market and income approaches which require judgment and the use of estimates, including discount rates, investee revenues and costs, and available comparable market data of private and public companies, among others. Valuations of such privately-held companies are inherently complex and uncertain due to the lack of liquid market for the company's securities. In addition, such investments are inherently risky in that such companies are typically at an early stage of development, may have no or limited revenues, may not be or may never become profitable, may not be able to secure additional funding or their technologies, services or products may not be successfully developed or introduced into the market.

For the year ended December 31, 2021, the Company recorded a gain from the sale of its investment in BDI in other income in the amount of approximately $1.6 million, net of transaction and legal expenses.

For the year ended December 31, 2020, the Company recorded an unrealized gain from its investment in Alphazyme resulting from a third-party capital contribution in the amount of $284,709, which represented the fair market value of the Company's investment in Alphazyme at that time. As of December 31, 2021, the Company does not consider its investment in Alphazyme to be impaired.

Income Taxes

The Company accounts for income taxes under the asset and liability method in accordance with ASC Topic 740, "Income Taxes". Under this method, income tax expense /(benefit) is recognized for: (i) taxes payable or refundable for the current year and (ii) deferred tax consequences of temporary differences resulting from matters that have been recognized in an entity's financial statements or tax returns. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in the results of operations in the period that includes the enactment date. A valuation allowance is provided to reduce the deferred tax assets reported if based on the weight of the available positive and negative evidence, it is more likely than not some portion or all the deferred tax assets will not be realized.

In determining taxable income for the Company's consolidated financial statements, we are required to estimate income taxes in each of the jurisdictions in which we operate. This process requires the Company to make certain estimates of our actual current tax exposure and assessment of temporary differences between the tax and financial statement recognition of revenue and expense. In evaluating the Company's ability to recover its deferred tax assets, the Company must consider all available positive and negative evidence including its past operating results, the existence of cumulative losses in the most recent years and its forecast of future taxable income. Significant management judgment is required in determining our provision for income taxes, deferred tax assets and liabilities and any valuation allowance recorded against our net deferred tax assets.

The Company is required to evaluate the provisions of ASC 740 related to the accounting for uncertainty in income taxes recognized in a company's financial statements. ASC 740 prescribes a comprehensive model for how a company should recognize, present, and disclose uncertain positions that the company has taken or expects to take in its tax return. For those benefits to be recognized, a tax position must be more-likely-than-not to be sustained upon examination by taxing authorities. Differences between tax positions taken or expected to be taken in a tax return and the net benefit recognized and measured pursuant to the interpretation are referred to as "unrecognized benefits." A liability should be recognized (or amount of net operating loss carry forward or amount of tax refundable is reduced) for unrecognized tax benefits, because it represents a company's potential future obligation to the taxing authority for a tax position that was not recognized as a result of applying the provision of ASC 740.

Comprehensive Income (Loss)

Comprehensive income (loss) includes net income (loss) and other revenue, expenses, gains and losses that are recorded as an element of shareholders' equity but are excluded from net income (loss) under U.S. GAAP. The Company does not have any significant transactions that are required to be reported in other comprehensive income (loss), and therefore, does not separately present a statement of comprehensive income (loss) in its consolidated financial statements.

Stock-Based Compensation

We recognize all share-based payments to employees, consultants, and our Board of Directors (the "Board"), as non-cash compensation expense, in research and development expenses or general and administrative expenses in the consolidated statement of operations based on the grant date fair values of such payments. Stock-based compensation expense recognized each period is based on the value of the portion of share-based payment awards that is ultimately expected to vest during the period. Forfeitures are recorded as they occur.

For performance-based awards, the Company recognizes related stock-based compensation expense based upon its determination of the potential likelihood of achievement of the specified performance conditions at each reporting date.

Net Loss Per Share

Basic net loss per share is computed by dividing net loss available to common shareholders by the weighted average number of common shares outstanding during the reporting period. Diluted net loss per share adjusts the weighted average number of common shares outstanding for the potential dilution that could occur if common stock equivalents, such as stock options, warrants, restricted stock and convertible debt, were exercised and converted into common stock, calculated by applying the treasury stock method.

For the years ended December 31, 2021 and 2020, the effect of the potential exercise of options to purchase 4,774,215 and 4,638,390 shares of common stock, respectively, were excluded from the computation of diluted net loss per share as their effect would have been anti-dilutive.

Recently Accounting Pronouncements

In June 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") *2016-13, Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*, which modifies the measurement of expected credit losses of certain financial instruments. ASU 2016-13 will be effective for the Company beginning in the first quarter of 2023. The Company does not expect ASU 2016-13 to have a material impact on our consolidated financial positions, results of operations, and cash flows.

In December 2019, the FASB issued ASU *No. 2019-12, Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*. The amendments of this update simplify the accounting for income taxes by removing certain exceptions related to the approach for intra-period tax allocation, the methodology for calculating income taxes in an interim period and the recognition of deferred tax liabilities for outside basis differences. The Company adopted ASU 2019-12 on January 1, 2021, and the adoption of ASU 2019-12 did not have any material impact on our consolidated financial positions, results of operations, cash flows and related disclosures.

Other pronouncements issued by the FASB or other authoritative accounting standards group with future effective dates are either not applicable or not significant to our consolidated financial statements.

Note 2: Cash, Cash Equivalent, and Investments

The Company's investments in debt securities are classified as held-to-maturity and are recorded at amortized cost, and its investments in money market funds are classified as cash equivalents. The following table shows the Company's cash, available-for-sale securities, and short-term and long-term investment securities by major security type as of December 31, 2021 and 2020:

	December 31, 2021				
	Level (1)	Fair Value	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Adjusted Cost
Cash and Cash Equivalents					
Cash		$ 1,377,094	$ —	$ —	$ 1,377,094
Money Market Funds	1	14,371,386	—	—	$ 14,371,386
Subtotal		15,748,480	—	—	15,748,480
Short-Term Investment Securities (2)					
Corporate Bonds (3)	2	4,509,285	—	(2,495)	$ 4,511,780
Total		$ 20,257,765	$ —	$ (2,495)	$ 20,260,260

	December 31, 2020				
	Level (1)	Fair Value	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Adjusted Cost
Cash and Cash Equivalents					
Cash		$ 149,015	$ —	$ —	$ 149,015
Money Market Funds	1	20,488,030	—	—	$ 20,488,030
Subtotal		20,637,045	—	—	20,637,045
Short-Term Investment Securities (2)					
Corporate Bonds (3)	2	8,473,461	22,473	(6,463)	$ 8,457,451
Total		$ 29,110,506	$ 22,473	$ (6,463)	$ 29,094,496

Notes:
(1) Definition of the three-level fair value hierarchy:
- Level 1 - Quoted prices (unadjusted) in active markets for identical assets or liabilities
- Level 2 - Other inputs that are directly or indirectly observable in the markets
- Level 3 - Inputs that are generally unobservable

(2) Short-term investment securities will mature within 12 months or less, from the applicable reporting date.
(3) The premium paid to purchase held-to-maturity investment securities was $283,940 and $282,946 for the years ended December 31, 2021 and 2020, respectively.

The Company considers declines in market value of its investment portfolio to be temporary in nature. The Company's investment policy requires investment securities to be investment grade and held to maturity with the primary objective to maintain a high degree of liquidity while maximizing yield. When evaluating an investment for other-than-temporary impairment, the Company reviews factors such as the length of time and extent to which fair value has been below its cost basis, the financial condition of the issuer and any changes thereto, changes in market interest rates, and whether it is more likely than not the Company will be required to sell the investment before recovery of the investment's cost basis. As of December 31, 2021, the Company does not consider any of its investments to be other-than-temporarily impaired.

Note 3: Research and Collaboration Agreements, Sublicense Agreements, and Investments in Privately-Held Companies

Janssen

On December 16, 2021, the Company entered into a Research, License, and Collaboration Agreement (the "Janssen Agreement") for the manufacture of therapeutic protein candidates using its C1-cell protein production platform with Janssen Biotech, Inc., one of the Janssen Pharmaceutical Companies of Johnson & Johnson ("Janssen"). Pursuant to the terms of the Janssen Agreement: (i) Janssen will pay Dyadic an upfront payment of $500,000 for a non-exclusive license to utilize the C1-cell protein production platform to develop C1 production cell lines for the manufacturing of Janssen's therapeutic protein candidates against several biologic targets, (ii) Janssen will provide R&D funding up to €1.6 million to develop and assess C1 production cell lines for its product candidates, (iii) Janssen will have an option to pay a mid-seven figure payment for an exclusive license from Dyadic to use the C1-cell protein production platform for the manufacturing of therapeutic proteins directed to one specific target, and upon exercise, Janssen would have the right to add additional non-exclusive targets to the collaboration and Dyadic would complete the technology transfer of the C1-cell protein production platform, fully enabling Janssen to internally develop C1 cell lines against licensed targets, and upon successful completion of the technology transfer, Dyadic is eligible to receive a milestone payment in the low seven figures, (iv) for each product candidate, Dyadic could receive development and regulatory milestones in the mid-seven figures, and (v) Dyadic could receive aggregate commercial milestone payments in the low nine figures per product, subject to a limit on the number of such products, with the amount depending on the cumulative amount of active pharmaceutical ingredient produced by Janssen for each product manufactured with Dyadic's C1-cell protein production platform.

Janssen may terminate the Janssen Agreement in its entirety, or on a country-by-country or other jurisdiction-by-other jurisdiction basis, for any or no reason, upon 90 days' prior written notice to Dyadic.

Accounting Treatment

The Company applied ASC 808, Collaborative Arrangements (ASC 808) and determined the Janssen Agreement is not applicable to such guidance. The Company concluded that Janssen represented a customer and applied relevant guidance from ASC 606, Revenue from Contracts with Customers (ASC 606) to evaluate the appropriate accounting for the Janssen Agreement.

The Company identified the following promises under the Janssen Agreement: (1) A right to access the C1-cell protein production platform; (2) our obligation to provide agreed upon research and development services under the R&D Funding; (3) participation in the joint steering committee; (4) the reservation of targets; (5) the grant of option to obtain a research license of intellectual property and know-how rights of its C1-cell protein production platform to produce target proteins; (6) our obligation to complete tech transfer activities upon the exercise of a research license; and (7) the options to obtain a commercial license and an exclusive license on specific targets.

The Company concluded that the research and development services under the R&D Funding represents a separate unit of account, because it is a prerequisite to the license agreement and a third-party contract research organization will be used to conduct the research. The Company also concluded that, while participation on the joint steering committee was capable of being distinct, participation is part of the research and development services and does not constitute the transfer of a good or service to Janssen within the context of the contract.

Other promises including the reservation of targets and tech transfer are not capable of being distinct from the licenses within the context of the contract and should therefore not be treated as a separate performance obligation. Additionally, at contract inception, the Company evaluated Janssen's options for a research license, commercial license and to exercise exclusive rights on certain targets in order to determine whether these options to purchase additional license rights at their standalone selling prices provide a material right (i.e., an optional good or service offered for free or at a discount) to the customer. The Company concluded that these options in the Janssen Agreement are not material rights and do not give rise to a separate performance obligation. Instead, these options are deemed as marketing offers, and additional option fee payments are recognized or being recognized as revenue when Janssen exercises the option. The exercise of an option that does not represent a material right is treated as a separate contract for accounting purposes.

Based on management's assessment, the Company concluded two performance obligations should be accounted for separately: (1) the agreed-upon research and development services, and (2) the right to access C1-cell protein production platform under the research plan. Accordingly, the Company will record the €1.6 million of R&D Funding as research and development revenue using the cost-based input method in accordance with the Company's policy (See Note 1).

As noted above, the Company received a non-refundable upfront payment of $0.5 million to reserve the initial protein targets until Janssen decides to exercise an option to license in the future, which represents a right to access the C1-cell protein production platform prior to using it. The Company will recognize the upfront payment of $0.5 million over the target reservation period, during which Janssen can obtain a research and/or commercial license and/or an exclusive license on specific targets, or recognize in full when the contract is terminated.

The Company also excluded option exercise fees and future milestone payments that the Company was eligible to receive under the Janssen Agreement, from the initial transaction price. The Company will not recognize revenue related to option exercise payments and future milestone payments until the associated event occurs, or relevant thresholds are met. The Company will re-evaluate the transaction price in each reporting period and as uncertain events are resolved or other changes in circumstances occur.

At December 31, 2021, the Company recorded the upfront payment of $0.5 million as deferred license revenue, current and non-current portion.

IDBiologics, Inc.

On July 8, 2020, the Company entered into a Common Stock Purchase Agreement (the "IDBiologics Agreement") with IDBiologics, In ("IDBiologics"). IDBiologics is a private biotechnology company focused on the development of human monoclonal antibodies for the treatment an prevention of serious infectious diseases. The Company was founded in 2017 and seeded by Vanderbilt University Medical Center in response to the repeated threats of epidemics around the world including Ebola in West Africa and Zika in the Americas. IDBiologics is developing a portfolio of monoclonal antibodies against SARS-CoV-2, influenza and Zika viruses.

Pursuant to the term of the IDBiologics Agreement, onJuly 8, 2021, Dyadic received 129,661 shares of IDBiologics' common stock, which represent 0.37% of IDBiologics' outstanding equity, in exchange of a feasibility study performed by Dyadic. Dyadic provided services including the use of Dyadic'sC1-cell technology to express a SARS-CoV-2 monoclonal antibody which IDBiologics licensed from the Vanderbilt Vaccine Center. The Company determined not to record the basis for its equity interest in IDBiologics because the fair value amount of the service provided is considered immaterial.

The Company evaluated the nature of its equity interest in IDBiologics and determined that IDBiologics is a VIE due to the capital structure of th entity. However, the Company is not the primary beneficiary of IDBiologics as Dyadic doesnot have the power to control or direct the activities of IDBiologics that most significantly impact the VIE. As a result, the Company does not consolidate its investment in IDBiologics.

On April 25, 2021, the Company entered into a project agreement (the "Project Agreement") to provide additional research services to IDBiologics For the year ended December 31, 2021, approximately $194,000 of research and development revenue and approximately $27,000 of unbilled accounts receivable were related to the Project Agreement.

Alphazyme

On May 5, 2019, the Company entered into a sub-license agreement (the "Alphazyme Sub-License Agreement") with Alphazyme, LLC ("Alphazyme"). Under the terms of the Alphazyme Sub-License Agreement, the Company has granted to Alphazyme, subject to the terms of the license agreement entered into between the Company and Danisco US, Inc. onDecember 31, 2015, a sub-license to certain patent rights and know-how related to Dyadic's proprietary C1-cell protein production platform for the purpose of commercializing certain pharmaceutical products that are used as reagents to catalyze a chemical reaction to detect, measure, or be used as a process intermediate to produce a nucleic acid as a therapeutic or diagnostic agent.

On June 24, 2020, the Company entered into an Amended and Restated Non-Exclusive Sub-License Agreement (the "Amended Sub-License Agreement") with Alphazyme to amend and restate the Alphazyme Sub-License Agreement. Pursuant to the Amended Sub-License Agreement and in consideration of Dyadic's transfer of its C1-cell protein production platform, Alphazyme issued 2.50% of the Class A shares of Alphazyme to Dyadic, and Dyadic became a party to the Alphazyme Limited Liability Company Agreement pursuant to which the Company will agree to certain customary rights, covenants and obligations. In addition, and subject to achieving certain milestones, Alphazyme is obligated to pay a potential milestone payment and royalties on net sales, if any, which incorporate Dyadic's proprietary C1-cell protein production platform.

On December 1, 2020, an Amended and Restated Limited Liability Company Agreement with Alphazyme (the "Amended Alphazyme LLC Agreement") was entered into. Under the Amended Alphazyme LLC Agreement, Alphazyme obtained additional capital contribution and Dyadic's ownership was diluted to 1.99%.

The Company evaluated the nature of its equity interest investment in Alphazyme and determined that Alphazyme is a VIE due to the capital structure of the entity. However, the Company is not the primary beneficiary of Alphazyme as Dyadic does not have the power to control or direct the activities of Alphazyme that most significantly impact the VIE. As a result, the Company doesnot consolidate its investment in Alphazyme. The Company reports its investment in Alphazyme under the cost method of accounting, given that it does not have the ability to exercise significant influence or control over Alphazyme.

For the year ended December 31, 2020, the Company recorded a gain of $284,709 from its investment in Alphazyme resulting from a third-party capital contribution obtained by Alphazyme. As of December 31, 2021, the Company does not consider its investment in Alphazyme to be impaired, as there was no event or transaction that would change the value of this investment.

BDI

On June 30, 2017, the Company entered into a strategic Research Services Agreement (the "RSA") with Biotechnology Developments for Industry in Pharmaceuticals, S.L.U. ("BDI Pharma"), and with VLP The Vaccines Company, S.L.U. ("VLPbio"), both of which are subsidiaries of Biotechnology Developments for Industry, S.L., a Spanish biotechnology company ("BDI Holdings" and together with BDI Pharma and VLPbio, "BDI").

The Company paid EUR €1.0 million (the "RSA Initial Payment") in cash to engage BDI to develop designated C1 based product candidates and further improve the C1 manufacturing process, in consideration of which Dyadic also received a 16.1% equity interest in BDI Holdings and a 3.3% equity interest in VLPbio. Under the RSA, BDI is obligated to spend a minimum amount of EUR €936,000 over two years for the research and development project.

The Company concluded that BDI is not a Variable Interest Entity ("VIE"), because BDI has sufficient equity to finance its activities without additional subordinated financial support and its at-risk equity holders have the characteristics of a controlling financial interest. Additionally, Dyadic is not the primary beneficiary of BDI as Dyadic does not have the power to control or direct the activities of BDI or its operations. As a result, the Company does not consolidate its investments in BDI, and the financial results of BDI are not included in the Company's consolidated financial results.

The Company performed a valuation analysis of the components of the transaction and concluded that the fair value of BDI equity interest was considered immaterial, the RSA Initial Payment of approximately USD $1.1 million (EUR €1.0 million) was accounted for as a prepaid research and development collaboration payment on our consolidated balance sheet, and the collaboration payment under the RSA paid by Dyadic were expensed as the related research services were performed by BDI.

On July 26, 2021, the Company entered (i) a Sale and Purchase of Shares Agreement under which the Company agreed to sell its 16.1% equity interest in BDI Holdings, and (ii) a Sale and Purchase of Shares Agreement under which the Company agreed to sell its 3.3% equity interest in VLPBio (together the "BDI Sale"). In connection with the closing of the BDI Sale, the Company received approximately $1.6 million, net of transaction and legal expenses in August 2021. The gain generated from the BDI Sale was recorded in other income.

In connection with the BDI Sale, the Company also entered into an amendment to the Service Framework Agreement (the "Amended SFA") with BDI Pharma. Under the Amended SFA, the Company maintains the right to engage in research and development projects at BDI Pharma until June 30, 2025, with the non-compete term extending to June 30, 2030, without any other material terms and conditions changed.

Novovet and Luina Bio

On April 26, 2019, the Company entered into a sub-license agreement (the "Luina Bio Sub-License Agreement") with Luina Bio Pty Ltd. ("Luina Bio") and Novovet Pty Ltd ("Novovet"). Under the terms of the Luina Bio Sub-License Agreement, the Company granted to Novovet, subject to the terms of the license agreement entered into between the Company and Danisco US, Inc. on December 31, 2015, a worldwide sub-license to certain patent rights and know-how related to Dyadic's proprietary C1-cell protein production platform for the exclusive and sole purpose of commercializing certain targeted antigen and biological products for the prevention and treatment of various ailments for companion animals.

In consideration of the license granted pursuant to the Luina Bio Sub-License Agreement, Dyadic received a 20% equity interest in Novovet ("Novovet Up-Front Consideration") in accordance with the terms of Novovet's Shareholder Agreement ("Shareholders Agreement") and will receive a percentage of royalties on future net sales and non-sales revenue, if any, which incorporates Dyadic's proprietary C1-cell protein production platform.

The Company evaluated the nature of its equity interest investment in Novovet and determined that Novovet is a VIE, because Novovet does not have sufficient equity to finance its activities without additional financial support from third party investors or lenders. However, the Company is not the primary beneficiary of Novovet as Dyadic does not have the power to control or direct the activities of Novovet that most significantly impact the VIE. As a result, the Company will not consolidate its investment in Novovet, but account for under the equity method investment, given that it has the ability to exercise significant influence, but not control, over Novovet.

To date Novovet has not raised the capital required to move this opportunity forward, and therefore, the Company has not transferred its C1-cell protein production platform to Novovet. Therefore, the Novovet Up-Front Consideration received under the Luina Bio Sub-License Agreement, in the form of a 20% equity interest in Novovet, does not yet meet the revenue recognition criteria under ASC 606.

On February 15, 2022, the Company sent a letter to Luina Bio Pty Ltd and Novovet Pty Ltd, indicating its intention to terminate the Luina Bio Sub-License Agreement.

Note 4: Income Taxes

The Tax Cuts and Jobs Act ("TCJA") was enacted on December 22, 2017 and became effective January 1, 2018. The TCJA contains several key provisions, including a reduction in the U.S. federal corporate income tax rate from 35% to 21% and repeal of the corporate alternative minimum tax ("AMT"). The TCJA's reduction in the U.S. statutory tax rate had no additional impact on the consolidated financial statement for the year ended December 31, 2019.

The TCJA repealed the corporate AMT but permitted unused AMT credit carryforwards to be used to reduce the regular tax obligation in future years. Any AMT credit carryforwards that do not reduce regular taxes are eligible for a 50% refund in 2018 through 2020, and a 100% refund in 2021. Subsequently, the Coronavirus Aid, Relief and Economic Security Act ("CARES Act"), which was signed into law in March 2020, accelerated the full refund of any unused AMT credits from 2021 (as provided for in the TCJA) to 2018 or 2019, at the taxpayer's election.

Accordingly, we reclassified the balance of the AMT credit from the deferred tax asset to an income tax receivable in 2018. The corresponding balance in the valuation allowance has been reversed into income tax benefit in the amount of $1,001,233. In 2019, we have received 50% or approximately $0.5 million AMT refund for tax year 2018. In 2020, we received the remaining 50% or approximately $0.5 million AMT refund for the tax year 2019.

For the year ended December 31, 2021, there was no provision for income taxes or unrecognized tax benefits recorded.

The significant components of gain (loss) before income taxes are as follows:

	Years Ended December 31,	
	2021	2020
U.S. operations	$ (13,115,869)	$ (9,246,122)
Foreign operations	45,618	(47,833)
Total loss before provision for income taxes	$ (13,070,251)	$ (9,293,955)

The Company has no current or deferred income tax for the years ended December 31, 2021 and 2020.

The income tax provision differs from the expense amount that would result from applying the federal statutory rates to income before income taxes due to permanent differences, state income taxes and a change in the deferred tax valuation allowance.

The reconciliation between the statutory tax rate and the Company's actual effective tax rate is as follows:

	Years Ended December 31,	
	2021	2020
Tax at U.S. statutory rate	(21.00)%	(21.00)%
State taxes, net of federal benefit	(4.52)	(3.60)
Non-deductible items	(0.84)	(0.45)
Change in valuation allowance	28.09	24.19
True-up adjustment	0.06	1.33
Foreign operations	0.09	(0.13)
Change in tax rate	(1.88)	—
Other	—	(0.34)
Effective income tax rate	—%	—%

The significant components of the Company's net deferred income tax assets are as follows:

	December 31,	
	2021	2020
Stock option expense	$ 947,400	$ 689,600
NOL carryforward	10,509,900	7,080,600
Research and development credits	1,656,500	1,656,500
Unrealized gain from investment in Alphazyme	(72,100)	(69,800)
Other	(6,100)	7,900
Deferred tax asset, net of deferred tax liabilities	13,035,600	9,364,800
Valuation allowance	(13,035,600)	(9,364,800)
Net deferred tax asset	$ —	$ —

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. In assessing the realizability of deferred tax assets, Management evaluates whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. Management considers the scheduled reversal of deferred tax liabilities, projected future taxable income and tax planning strategies in making this assessment. Based on Management's evaluation, the net deferred tax asset, was offset by a full valuation allowance as of December 31, 2021 and 2020.

The Company had net operating loss ("NOL") carryforwards available as of December 31, 2021 and 2020, in the amount of approximately $39.9 million and $27.3 million, respectively. Approximately $37.1 million of the net operating loss carryforwards will be carried forward indefinitely and will be available to offset 80% of taxable income. The remaining amount of the net operating loss carryforwards will expire at varying dates through 2040.

Indian Tax

Income generated in India is subject to Tax Deducted at Source ("TDS"), which is a means of collecting income tax at the source when income is generated rather than at later by the Indian government. The TDS amount paid can be used as foreign tax credit for US tax purposes. However, we do not expect to use the credit due to our loss from operation. As a result, the Company recorded a provision for income taxes of approximately $31,000 as a result of TDS for the year ended December 31, 2020. There was no provision for income taxes related to TDS for the year ended December 31, 2021.

Note 5: Commitments and Contingencies

Leases

Jupiter, Florida Headquarters

The Company's corporate headquarters are located in Jupiter, Florida. The Company occupies approximately 2,000 square feet with a monthly rental rate and common area maintenance charges of approximately $4,400. The lease will expire on September 1, 2022. The Company will reconsider the square footage of the leased space to align with the staffing requirements of the future operations of the Company.

The Netherlands Office

The Company maintains a small satellite office in Wageningen, The Netherlands. The Company occupies a flexible office space for an annual rental rate of approximately $4,000. The lease expires on January 31, 2023, and thereafter, the Company will reconsider the leased space to align with the future operations of the Company.

VTT Research Contract Extension

On June 28, 2019, the Company extended its research contract ("Contract") through June 2022 with VTT Technical Research Centre of Finland Ltd. ("VTT"). Under the terms of this Contract, Dyadic will pay VTT a total of EUR €2.52 million over three years to continue developing Dyadic's C1 fungal expression system for therapeutic protein production, including C1 host system improvement, glycoengineering, and management of third-party target protein projects. VTT is subject to an additional success bonus up to EUR €350,000 based on the technical targets stipulated in the Contract. Dyadic and its sublicensees will also have the right to use synthetic promoters developed by VTT with an access fee. On November 9, 2021, the Company further expanded the Contract to pay an additional EUR €191,700 over the next 6 months to conduct the glycoengineering strategy with the best protease deletion strains and other platform development work. Dyadic retains the right to terminate the Contract with 90 days' notice.

Purchase Obligations

The following table provides a schedule of commitments related to agreements to purchase certain services in the ordinary course of business, as of December 31, 2021:

2022	$ 2,617,601
2023	374,689
2024	327,041
Total	$ 3,319,331

The purchase obligations in the table above are primarily related to our contracts with the Company's contract research organizations to provide certain research services. The contracts set forth the Company's minimum purchase requirements that are subject to adjustments based on certain performance conditions. All contracts expire in or prior to 2024.

Legal Proceedings

We are not currently involved in any litigation that we believe could have a materially adverse effect in our financial condition or results of operations. From time to time, the Company is subject to legal proceedings, asserted claims and investigations in the ordinary course of business, including commercial claims, employment and other matters, which management considers immaterial, individually and in the aggregate. The Company makes a provision for a liability when it is both probable that a liability has been incurred and the amount of the loss can be reasonably estimated. The requirement for these provisions is reviewed at least quarterly and adjusted to reflect the impact of negotiations, settlements, rulings, advice of legal counsel and other information and events pertaining to a particular case. Litigation is inherently unpredictable and costly. Protracted litigation and/or an unfavorable resolution of one or more of proceedings, claims or investigations against the Company could have a material adverse effect on the Company's consolidated financial position, cash flows or results of operations.

Note 6: Share-Based Compensation

Description of Equity Plans

The 2021 Equity Incentive Award Plan (the "2021 Plan") was adopted by the Company's Board of Directors on April 9, 2021, and approved by the Company's Annual Meeting of Shareholders (the "Annual Meeting") on June 11, 2021. The 2021 Plan serves as a successor to the Company's 2011 Equity Incentive Plan (the "2011 Plan"). Since the effective date of the 2021 Plan, all equity awards were made from the 2021 Plan, and no additional awards will be granted under the 2011 Plan. The 2021 Plan increased the number of shares available for the grant of stock options, restricted stock awards and other awards by 3,000,000 in addition to the number of shares remaining available for the grant of new awards under the 2011 Plan as of April 16, 2021.

As of December 31, 2021, the Company had 4,774,215 stock options outstanding and an additional 4,263,386 shares of common stock available for grant under the 2021 Plan. As of December 31, 2020, there were 4,638,390 stock options outstanding and an additional 2,134,211 shares of common stock available for grant under the 2011 Plan.

Stock Options

Options are granted to purchase common stock at prices that are equal to the fair value of the common stock on the date the option is granted. Vesting is determined by the Board of Directors at the time of grant. The term of any stock option awards under the Company's 2011 Plan and 2021 Plan is ten years, except for certain options granted to the contractors which are either one or three years.

The grant-date fair value of each option grant is estimated using the Black-Scholes option pricing model and amortized on a straight-line basis over the requisite service period, which is generally the vesting period, for each separately vesting portion of the award as if the award was, in substance, multiple awards. Use of a valuation model requires management to make certain assumptions with respect to selected model inputs, including the following:

Risk-free interest rate. The risk-free interest rate is based on U.S. Treasury rates with securities approximating the expected lives of options at the date of grant.

Expected dividend yield. The expected dividend yield is zero, as the Company has never paid dividends to common shareholders and does not currently anticipate paying any in the foreseeable future.

Expected stock price volatility. The expected stock price volatility was calculated based on the Company's own volatility since the DuPont Transaction. The Company reviews its volatility assumption on an annual basis and has used the Company's historical volatilities since 2016, as the DuPont Transaction resulted in significant changes in the Company's business and capital structure.

Expected life of option. The expected life of option was based on the contractual term of the option and expected employee exercise and post-vesting employment termination behavior. The Company uses the weighted average vesting period and contractual term of the option as the best estimate of the expected life of a new option, except for the options granted to the CEO (i.e., 5 or 10 years) and certain contractors (i.e., 1 or 3 years).

The assumptions used in the Black-Scholes option pricing model for stock options granted for the years ended December 31, 2021 and 2020 are as follows:

	Years Ended December 31,	
	2021	**2020**
Risk-free interest rate	0.05% - 1.24%	0.25% - 1.72%
Expected dividend yield	—%	—%
Expected stock price volatility	54.52% - 60.80%	39.94% - 51.22%
Expected life of options	0.5 - 6.25 Years	1.75 - 6.25 Years

The following table summarizes the combined stock option activity under the Company's Equity Compensation Plans:

	Shares	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (Years)	Aggregate Intrinsic Value
Outstanding at December 31, 2019	3,860,390	$ 1.76	5.69	$ 13,287,932
Granted	913,000	5.24		
Exercised	(135,000)	1.89		
Expired	—	—		
Canceled	—	—		
Outstanding at December 31, 2020	4,638,390	$ 2.44	5.64	$ 13,701,610
Granted (1)	870,825	5.11		
Exercised (2)	(735,000)	1.67		
Expired	—	—		
Canceled	—	—		
Outstanding at December 31, 2021	4,774,215	$ 3.04	6.14	$ 8,413,444
Exercisable at December 31, 2021	3,384,516	$ 2.45	5.21	$ 7,674,636

Notes:

(1) Represents the following stock options granted:

- Annual share-based compensation awards on January 4, 2021, including: (a) 417,500 stock options with an exercise price of $5.16 per share granted to executives and key personnel, upon one year anniversary, or vesting annually in equal installments over four years, (b) 227,500 stock options with an exercise price of $5.16 per share granted to members of the Board of Directors, vesting upon one year anniversary, (c) 23,325 stock options with an exercise price of $5.16 per share granted to employees, vesting annually in equal installments over four years and (d) 5,000 stock options with an exercise price of $5.16 per share granted to a consultant, vesting upon one year anniversary.
- One-time award on January 8, 2021, 35,000 stock options with an exercise price of $5.50 per share granted to a new member of the Board of Directors, vesting in one year from the grant date.
- One-time award on January 21, 2021, 7,500 stock options with an exercise price of $5.65 per share granted to a consultant, vesting in one year from the grant date.
- One-time award on March 22, 2021, 30,000 stock options with an exercise price of $6.87 per share granted to a consultant, vesting in one year from the grant date.
- One-time award on August 24, 2021, 25,000 stock options with an exercise price of $4.96 per share granted to a consultant, vesting in one year from the grant date.
- One-time award on November 1, 2021, 25,000 stock options with an exercise price of $4.14 per share granted to a consultant, vesting in one year from the grant date.
- One-time award on November 9, 2021, 75,000 performance-based stock options with an exercise price of $4.10 per share granted to a new executive, vesting upon the achievement of specific performance conditions. As of December 31, 2021. the Company believes that the achievement of the requisite performance conditions is not probable and, as a result, no compensation cost has been recognized for these awards.

(2) Represents the following stock options exercised:

- 500,000 stock options exercised at $1.67, 150,000 stock options exercised at $1.63, 60,000 stock options exercised at $1.93, and 25,000 stock options exercised at $1.39.

The weighted average grant-date fair market value of stock options granted for the years ended December 31, 2021 and 2020 was $2.49 and $2.09 respectively, based on the Black-Scholes option pricing model. The intrinsic value of options exercised for the years ended December 31, 2021 and 2020 was $1,729,850 and $481,139, respectively.

As of December 31, 2021 and 2020, total unrecognized compensation cost related to non-vested stock options granted under the Company's equity compensation plans was $856,982 and $477,232, respectively, which is expected to be recognized over a weighted average period of 3.07 years and 2.84 years, respectively. The Company will adjust unrecognized compensation cost for actual forfeitures as they occur.

Compensation Expenses

We recognize all share-based payments to employees, consultants, and our Board, as non-cash compensation expense, in research and development expenses or general and administrative expenses in the consolidated statement of operations, and these charges had no impact on the Company's reported cash flows. Stock-based compensation expense is calculated on the grant date fair values of such awards, and recognized each period based on the value of the portion of share-based payment awards that is ultimately expected to vest during the period. Forfeitures are recorded as they occur.

For performance-based awards, the Company recognizes related stock-based compensation expenses based upon its determination of the potential likelihood of achievement of the specified performance conditions at each reporting date. There was no performance-based award recognized during the years ended December 31, 2021 and 2020.

Total non-cash stock option compensation expense was allocated among the following expense categories:

	Years Ended December 31,	
	2021	2020
General and administrative	$ 1,571,328	$ 1,466,461
Research and development	212,774	185,432
Total	$ 1,784,102	$ 1,651,893

Note 7: Shareholders' Equity

Issuances of Common Stock

For the years ended December 31, 2021 and 2020 there were 735,000 and 135,000 shares of the Company's common stock issued, as a result of the exercise of stock option, with a weighted average issue price per share of $1.67 and $1.89, respectively.

Treasury Stock

As of December 31, 2021, and 2020, there were 12,253,502 shares of common stock held in treasury, at a cost of approximately $18.9 million, representing the purchase price on the date the shares were surrendered to the Company.

Open Market Sale Agreement℠

On August 13, 2020, we entered into an Open Market Sale Agreement℠ with Jefferies LLC ("Jefferies"), with respect to an at the market offering program under which we may offer and sell, from time to time at our sole discretion, shares of our common stock, par value $0.001 per share, having an aggregate offering price of up to $50.0 million through Jefferies as our sales agent or principal.

We have not and are not obligated to sell any shares under the sale agreement. Subject to the terms and conditions of the sale agreement, Jefferies will use commercially reasonable efforts, consistent with its normal trading and sales practices and applicable laws and regulations, to sell shares of our common stock from time to time based upon our instructions, including any price, time or size limits or other customary parameters or conditions we specify, subject to certain limitations. Under the sale agreement, Jefferies may sell shares of our common stock by any method permitted by law deemed to be an "at the market offering" as defined in Rule 415(a)(4) under the Securities Act of 1933, as amended.

We will pay Jefferies a commission equal to 3.0% of the gross proceeds from each sale of shares of our common stock sold through Jefferies under the sale agreement and will provide Jefferies with customary indemnification and contribution rights. In addition, we agreed to reimburse certain legal expenses and fees by Jefferies in connection with the offering up to a maximum of $50,000, in addition to certain ongoing disbursements of Jefferies' counsel, if required. The sale agreement will terminate upon the sale of all $50.0 million of shares under the sale agreement, unless earlier terminated by either party as permitted therein.

The issuance and sale, if any, of shares of our common stock by us under the sale agreement will be made pursuant to a registration statement on Form S-3 filed with the SEC on August 13, 2020 and declared effective by the SEC on August 25, 2020 and the accompanying Prospectus, as supplemented by a Prospectus Supplement. As of the date of this filing, there have been no sales made under the Open Market Sale Agreement℠, and we have no immediate plans to sell any securities under this program to fund our near-term business plan.

Note 8: Subsequent Events

For purpose of disclosure in the consolidated financial statements, the Company has evaluated subsequent events through March 29, 2022, the date the consolidated financial statements were available to be issued. Except as discussed below, management is not aware of any material events that have occurred subsequent to the balance sheet date that would require adjustment to, or disclosure in the accompanying financial statements.

Stock Option Grant

On January 3, 2022, the Company granted to executives and key personnel an aggregate of 325,000 stock options with an exercise price of $4.81. The options will vest in one year from the date of grant or annually in equal installments over four years.

On January 3, 2022, the Company granted 75,000 performance-based stock options to a key personnel with an exercise price of $4.81. The options will vest upon the achievement of specified performance conditions.

On January 3, 2022, the Company granted to members of the Board an aggregate of 277,500 stock options with an exercise price of $4.81. The options will vest in one year from the date of grant.

On January 3, 2022, the Company granted to non-executive employees an aggregate of 23,325 stock options with an exercise price of $4.81. The options will vest annually in equal installments over four years.

On January 3, 2022, the Company granted 15,000 stock options to a consultant with an exercise price of $4.81. The options will vest in one year from the date of grant.

Termination of a Material Definitive Agreement

On March 17, 2022, the Company and Sorrento Therapeutics, Inc., have mutually agreed to terminate the August 11, 2021 term sheet, due to a disagreement between the parties concerning the timing, and terms and conditions, for the entry into the license agreement. Dyadic has not incurred any early termination penalties.

Exhibit 10.12.1

INTRACOASTAL POINTE OFFICE BUILDING
AMENDMENT TO OFFICE LEASE

This Amendment to Office Lease Agreement made and entered in to this 16th day of August, 2021 by and between Quentin Partners Co. as Agent for Intracoastal Pointe, Inc. (both Florida corporations), as "Landlord;" and Dyadic International, Inc., as "Tenant."

WITNESSETH

WHEREAS, Landlord and Tenant entered into that Office Lease dated December 30, 2010, and the subsequent Amendments; relative to the Leased Premises set forth therein. Premises currently consist of Suite 405 (2,087 ± s.f.) which is currently known as Suite 404; and

WHEREAS, Tenant now desires to extend the term of the lease by twelve months until August 31, 2022; and

TERM: Term will begin on September 1, 2021 and end on August 31, 2022 (unless otherwise terminated as provided in the Lease).

TOTAL RENT FOR SUITE 405 (2,078 ± s.f.):
9/01/21-8/31/22: $14.00 per square foot; $29,092.00 / year; $2,424.33 / month*
*All rates plus CAM (which shall never be less than $9.50 psf) plus sales tax (currently at 6.5%).

PREMISES: Landlord will deliver premises in an "as is" condition.

During the Term, Tenant shall use the number Suite "404". Tenant shall be responsible for all expense related to the adjustment of Suite numbers.

Except as set forth herein, all other terms, conditions, provisions and requirements of the Lease remain unchanged and in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be executed on the day and year first above written.

LANDLORD:
QUENTIN PARTNERS CO.
As Agent for: Intracoastal Pointe Inc.
/s/ James Q Riordan, Jr
By: James Q Riordan, Jr., President

witness
/s/ Sharon L Wood
Sharon Wood

TENANT:
DYADIC INTERNATIONAL, INC

/s/ Mark Emalfarb
By: Mark Emalfarb, CEO

WITNESS:
/s/ Heidi Zosiak

Exhibit 23.1

Mayer Hoffman McCann P.C.
140 Fountain Parkway North, Suite 410 ■ St. Petersburg, FL 33716
Main: 727.572.1400 ■ Fax: 727.571.1933 ■ www.mhmcpa.com

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statements on Form S-3 (File No. 333-245687) and Form S-8 (File No. 333-258755 and 231712) of our report dated March 29, 2022, with respect to the consolidated financial statements of Dyadic International, Inc. and Subsidiaries as of December 31, 2021 and 2020 and for the two years ended December 31, 2021 included in this annual report on Form 10-K.

Mayer Hoffman McCann P.C.

/s/ Mayer Hoffman McCann P.C.
Clearwater, Florida
March 29, 2022

KRESTON Member of Kreston International - a global network of independent accounting firms

Exhibit 31.1

Certification of Principal Executive Officer
Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
and Securities and Exchange Commission Release 34-46427

I, Mark A. Emalfarb, certify that:

1. I have reviewed this annual report on Form 10-K of Dyadic International Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and we have:
    a. designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
    b. designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
    c. evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
    d. disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

    a. all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    b. any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 29, 2022
By: /s/ Mark A. Emalfarb

Name: Mark A. Emalfarb
Title: Chief Executive Officer

Exhibit 31.2

Certification of Principal Executive Officer
Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
and Securities and Exchange Commission Release 34-46427

I, Ping W. Rawson, certify that:

1. I have reviewed this annual report on Form 10-K of Dyadic International Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and we have:

    a. designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
    b. designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
    c. evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
    d. disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

    a. all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    b. any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 29, 2022
By: /s/ Ping W. Rawson

Name: Ping W. Rawson
Title: Chief Financial Officer

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Dyadic International Inc. (the "Company") on Form 10-K for the year ended December 31, 2021 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Mark A. Emalfarb, certify, pursuant to 18 U.S.C. ss. 1350, as adopted pursuant to ss. 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date:	March 29, 2022
By:	/s/ Mark A. Emalfarb
Name:	Mark A. Emalfarb
Title:	Chief Executive Officer

Exhibit 32.2

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Dyadic International Inc. (the "Company") on Form 10-K for the year ended December 31, 2021 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Ping W. Rawson, certify, pursuant to 18 U.S.C. ss. 1350, as adopted pursuant to ss. 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date:	March 29, 2022
By:	/s/ Ping W. Rawson
Name:	Ping W. Rawson
Title:	Chief Financial Officer